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*"Brazil" Navigator*

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THE

# BRASILIAN NAVIGATOR;

OR,

## SAILING DIRECTORY

FOR ALL

# THE COASTS OF BRASIL, ETC.

FROM

THE RIVER PARA TO THE RIO DE LA PLATA,

INCLUDING GENERAL INSTRUCTIONS FOR THE ROUTES,

BOTH FROM

# ENGLAND AND FROM NORTH AMERICA,

WITH DESCRIPTIONS OF AND DIRECTIONS FOR THE

MADEIRA, CANARY, AND CAPE VERDE ISLANDS,

FERNANDO NORONHA, ETC.



SELECTED CHIEFLY FROM THE MEMOIR ON, AND INSTRUCTIONS FOR, THE "ATLANTIC OCEAN," AND THE NEW SAILING DIRECTORY FOR THE "ETHIOPIC OR SOUTHERN ATLANTIC OCEAN,"

By JOHN PURDY;

THIRD EDITION, IMPROVED FROM THE OBSERVATIONS OF MM. TARDY DE MONTRAVEL, CH. PH. DE KERHALLET, CHIRON DU BROSSAY, AND DU PERIER, OF THE FRENCH MARINE, AND OTHER OFFICERS;

By ALEX. G. FINDLAY,

*Fellow of the Royal Geographical Society.*

TO ACCOMPANY LAURIE'S NEW GENERAL CHART OF THE COASTS, WITH PARTICULAR PLANS OF THE HARBOURS.

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1851.

CARD  
CATALOGUE.



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THE CHART which this book is principally intended to illustrate, is entitled "GENERAL CHART of the COASTS of BRASIL, &c., from the RIVER PARA to BUENOS AYRES; with PARTICULAR PLANS of the HARBOURS. Constructed, chiefly, from the Surveys of the BARON ROUSSIN and Captain WM. HEWETT, adjusted by the later observations of Captain PHILIP PARKER KING, Captain ROBERT FITZROY, and other distinguished Officers of the British Royal Navy." Three large sheets, with Views, &c. Price, with the Book, 12s.

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## P R E F A C E.

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IN submitting this new edition of the *Brasilian Navigator* to the public, it may be desirable to state in what respects it differs from its predecessors. The principal portion of the work has been drawn up from the *Pilote du Brésil*, the ample work of Admiral the Baron Roussin, and from the continuation of the observations by M. Barral, of the French marine. Incorporated with these were the observations of the late lamented Captain W. Hewett, of Captain Peter Heywood, and of many other officers of our own Royal Navy, and of the mercantile marine. These sources, it will be found, are acknowledged in their respective pages. To these labours it has been only necessary to apply those corrections and emendations which the lapse of time has rendered necessary. The first source to which we here acknowledge ourselves indebted for the improvement of the present book is that of the survey of the North coast, between Maranham and Pará, under the orders of the French government, by M. L. Tardy de Montravel, in 1843. The result of this survey is shown on the chart, and from his "*Instructions pour Naviguer sur la Côte Septentrionale du Brésil*," &c.; a continuation of the work of Admiral Roussin, which appeared in 1847, we have taken the description and directions in the work, a most important addition to its utility; combined with this is the result of the observations of M. Ch. Ph. de Kerhallet, also of the French marine, in 1837—1840. To the descriptions of the coast between this and the Rio Plata we have, as will be seen, incorporated many recent acquirements.

To the unhappy differences which have disturbed the internal tranquillity of the provinces on the Rio Plata, we owe some directions drawn up by officers of the French navy, employed in the armed intervention of the European powers: these are the "*Instructions Nautiques*," &c., by Capt. Chiron du Brossay, 1845; and "*Notes sur l'Atterissage du Rio de la Plata*, by Lieut. du Perier," 1842. These have afforded us the means of improving and amplifying the observations on that river. To these and other sources we beg to tender our acknowledgments.

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## OCTOBER, 1851.

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RIO PLATA LIGHT-VESSEL.—According to a notice, dated from *Buenos Ayres*, December 10th, 1849, a barque, called the *Condor*, was moored between Point Indio and the eastern extremity of the Ortiz Bank, and every night has a large lanthorn hoisted on the foremast, visible in ordinary weather at nine miles off. By day a flag is shewn when any vessel is in sight, for the guidance of ships entering or quitting the port. The light-ship bears from Point Indio N.E. by N. nine miles, and from the end of the Ortiz Bank S.W. by S. seven miles, in lat.  $35^{\circ} 11'$  S., long.  $57^{\circ} 3'$  W. By orders she has able and examined pilots always on board, for the service of any vessel applying for their aid.

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[See also the last page.]



# BRASILIAN DIRECTORY.

\* \* \* THROUGHOUT this Work the given LONGITUDE is the LONGITUDE from GREENWICH. In the Sailing Directions the BEARINGS and COURSES are those by COMPASS, unless where otherwise expressed; but those given thus —[W.S.W.]—signify the TRUE; but the given direction of Wind, Tide, and Current, is always to be considered as the true. The DEPTHS are those at low water, spring-tides, and the MILES Geographic, of 60 to a degree.

## SECTION I.

### GENERAL OBSERVATIONS ON THE WINDS, SEASONS, TIDES, AND CURRENTS.

#### I.—OF THE WINDS AND SEASONS.

THE nature of the perennial, periodical, and variable winds, which prevail to the northward of the Equator, and which include the Harmattan on the African coast, with the south-easterly trade wind of the Ethiopic Ocean, has been described in our former Book for the Atlantic Ocean. But on the latter (the S.E. Trade) some further explanation may be given, and prove useful.

The S.E. trade wind has been described as more regular than the N.E., and much more serene. Its northern limit, as shown on the charts, and in the volume above mentioned, comes up, in the summer season of the northern hemisphere, very far to the northward of the Equator; so that its mean annual limit is in about  $2\frac{1}{2}^{\circ}$  N.; which is probably occasioned by the excessive heating of the land of Africa, near the Equator. The N.E. trade seldom proceeds so far South as to reach the Equator.

It has been remarked that both trade winds, in the *eastern* regions, blow more directly, that is, more northerly or southerly, toward the Equator than in the ocean at large. The S.E. trade, in particular, continues very far southerly; so that, within a line drawn from  $2^{\circ}$  N., longitude  $15^{\circ}$  W. toward Sierra Leone, the wind is seldom to the eastward of S.E.; but becomes more and more eastwardly as it proceeds westward.\*

ON THE EASTERN COAST OF BRASIL, between the months of September and March, the winds generally prevail from N. by E. to N.E. by E.: between March and September the prevailing winds are from E. by N. to E.S.E.

The former of these is generally termed the NORTHERLY MONSOON, and the latter, the *southerly* one; although there appears, in fact, to be no direct and opposite change in them on or about the equinoxes, as is generally the case with the winds so called. These winds are simply a continuation of the S.E. trade, *which changes its direction* as above described, and as influenced by the land on its approach thereto.†

\* In March, 1823, H.M.S. *Tartar* crossed the Equator, after a favourable passage from Teneriffe, in longitude  $22^{\circ} 12' 20''$  W., with a strong breeze from the S.S.E. This was the first of the S.E. Trade, which was thence found to the latitude of  $17^{\circ}$  S. and longitude  $35^{\circ}$ .

An intelligent commander in the East India service reported, some years ago, that he had once found the N.E. trade wind reduced in breadth to nine degrees only, and that it then extended to several degrees across the Equator. The month is not given; it was probably March.—(*Major Rennell*.)

† The change in the direction of the trade winds, from *towards* the Equator in the eastern regions, to *from* it in the western, will agree with the theory proposed by Mr. Redfield, that the system of the currents of air on each side of the Equator consists of *horizontal* circuits of revolution, around probably

The influence of the land, or rather of its *temperature*, is more or less, according to the action of the sun at the particular seasons of the year. When the sun is to the northward no particular difference is observed in the S.E. trade, but it may be carried within sight of the coast, with scarcely any deviation; nevertheless, about both equinoxes, but more especially when the sun is advancing to the northward, calms, and very light winds, with apparently no settled quarter, will prevail near the coast; and this may be said to be more particularly the case on that part of it between the Abrolhos and Cape Frio. As the sun advances to the southward the trade wind will gradually come round to the north-eastward, and will have its retrograde movement with the return of the sun to the equinox. At this latter season ships, on approaching the coast, will begin to discover this northerly inclination of the S.E. trade, when within four or five degrees of it, and which they will find gradually to increase as they incline to the westward.

Within a few miles of the coast, and in the different roadsteads and harbours, the wind generally blows directly upon it; and in the deep harbours, and upon the shore, this is, generally, superseded by a land breeze, which sometimes lasts the greater part of the night. About Rio Janeiro this land breeze sometimes extends as far to seaward as Round Island, while at Pernambuco it rarely reaches the roadstead.

The preceding remarks are those of Captain Hewett. Pimentel, and, after him, M. D' Après, has said that the winds of the northerly monsoon, between September and March, are from N.E. and E.N.E., or less northerly than as above; and that those of the southerly monsoon are from E.S.E. to S.S.E., or more southerly. It may, therefore, be admitted that they do sometimes prevail more from the South, and that those near the North but seldom occur.

Mr. Lindley, in his Narrative of a Voyage to Brasil, having resided a considerable time on shore, at Bahia, &c., has described the in-shore wind as follows:—"From Cape St. Augustin (southward) the wind blows, nine months in the year, chiefly north-easterly in the morning, and north-westerly during the evening and night; this continues gradually changing along the coast, till, at Rio Janeiro and the Rio Plata, it becomes a regular land breeze from evening till morning, and throughout the day the reverse. During the three stormy months, that is, from the latter end of February to that of May, the wind is, generally, southerly, blowing very fresh and squally, at times, from the south-west."

Captain Hewett has observed that the winds off Cape Frio are seldom found to the southward of East; and, in the northern monsoon, they are generally to the northward of N.E. Heavy and violent squalls are occasionally met in rounding the Cape, to obviate the effects of which every precaution is required.

The same officer adds that, at Rio Janeiro, the sea breeze varies in the commencement from ten to one o'clock in the forenoon, and ceases in the evening between the hours of seven and eleven. At the full and change of the moon violent squalls from the N.W., named by the Portuguese "*TERRE ALTOS*," immediately supersede the sea breeze, lasting from four to six hours.

The late Captain Peter Heywood, in the British frigate *Nereus*, was for three years on the Brasil station, and the greater part of that time in or near the River Plata; this gentleman describes the winds hereabout as follow:—

"At the ENTRANCE of the RIVER PLATA the prevailing winds, during the summer months, from September to March, are north-easterly, with tolerably clear weather over head, but a dense atmosphere near the horizon. These winds haul gradually to the eastward as you advance up the river; and, about the full and change of the moon, strong breezes from the south-eastward are common at this season, accompanied with rain and foul weather. At Buenos Ayres, during the summer months, the S.E. winds are generally fresh in the day-time, hauling round to the northward during the night.

"During the winter months, from March to September, the prevailing winds at the entrance of the Plata are S.W., or more westerly; but, up the river, more generally from the northward, than from the southward of West.

"The winter season is the best, in point of weather, at Buenos Ayres; for the winds being chiefly from N.W. to S.W., the water is smooth, and the communication can be kept

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elongated axes, which in the North Atlantic would be around the region of extra-tropical calms, called the horse latitudes; and that the system of the trades is *not* to be referred to the expansion of the air in the tropical regions, which would occasion *vertical* currents of air passing from the Equator northward or southward.—See *Nautical Magazine*, 1843, p. 733.



up between the shore and the shipping with more facility. The weather is sometimes, but not frequently, foggy. Fogs are most common in the months of July, August, and September, and prevail more at the entrance of the river, as far up as the S.E. tail of the Ortiz, than above the banks."

The VARIABLE WINDS, in the southern regions, being generally similar to those of the northern hemisphere, require no description.

Having given above a general description of the Winds on and near the Brazilian coast, we now add some additions to the same from the "*Pilote du Brésil*" of the Baron Roussin, 1827.

This gentleman has observed that the general classification of the winds into two monsoons, according to Pimentel, &c., requires considerable modification: for, in his experience on the different parts of the coast, he found the winds very variable in the two seasons: for example, in five months of a southern monsoon they had not forty days with the wind E.S.E. or S.S.E., though, on another coast, easterly winds may more certainly be expected. The navigators of these coasts reckon much more on easterly winds than any others in the months of October, November, and December, which may be considered as intervening months between the monsoons. The summary given in the Tables of Winds, &c., show, from nearly one year's navigation on the coast of Brasil, their ordinary mutability. The First Table shows the observations made on 130 days of the southern monsoon, commencing on the 20th of May, 1819; and it may be noticed that there were only thirty-five days of wind from the S.E. quarter, such as might be expected according to the general classification. During thirty-eight days the winds were from the N.E. quarter, such as might be expected in the northern monsoon, and afterward there were six days with the wind between North and West, and twenty-three days between West and South.

By the Second Table, which includes the observations of 153 days of the northern monsoon, commencing 1st September, we find seventy-five days of south-easterly winds, seven days with the wind between North and West, six days with the wind between South and West, and only sixty-two days with the wind between North and East.\*

In the midst of these varieties we find again certain particular winds; the one accidental, the others periodical, and which seem to be of a local and limited nature. Of this class are the S.W. squalls, which come on during the rainy season, at the times of new and full moon: the Brazilians call them *Rebojos*, and they prevail for three or four days; moderate when accompanied by rain, but with greater strength when the sky is unsettled.

"On the southern part of the coast of Brasil, from March to September, commanders of vessels should be prepared to meet stiff south-west gales, at intervals of eight or ten days; at times oftener. I have known several vessels jogging onwards towards their destination, with an old summer suit of sails, but their spars adrift on deck, and boats unlashed, busy painting and cleaning up for a harbour, taken completely unawares, lose their canvas, thrown into considerable confusion, damage cargo, and detained some time longer on their voyage. All this is easily obviated by a little care and attention; and the simple noting of the height of the barometer, or sympiesometer, every four hours, would prove a complete guard, as I found both these instruments gave timely warning of the approach of these gales."—*Mexicano*.

The other accidental winds are of the nature of squalls, and are found principally in the environs of the Abrolhos: hence they are called *Abrolhos squalls*. They are most frequent in the months of May, June, July, and August, when the season is very wet, and the general wind from E.S.E. They proceed, it is said, from small white and round clouds, and with a force that is irresistible.

The LAND BREEZES, on the coast of Brasil, are nearly regular, and are felt all night during the greatest part of the year. They are found on all points of the coast between Maranham, in the North, and St. Catharine's, in the South, but vary in force and regularity according to the season and place. On approaching the Equator the more discernible they become. At *Rio Janeiro* they occur daily, and seldom rise before nine o'clock in the evening, and do not finish till the morning of the following day. Such, too, is the case at *Espirito Santo*, *Porto Seguro*, *Bahia*, *Pernambuco*, and other places similarly situated.

\* The Tables here referred to are given in the "*New Sailing Directory for the Ethiopic or Southern Atlantic Ocean*," pp. 58—60.

During the northern monsoon the land breezes are more regular than in the southern monsoon; they are also stronger, because then the volume of wind comes more direct, and beating constantly against the coast, the reaction causes a freshness in the weather on shore, which produces a more regular and stronger effect.

In the southern monsoon the winds are more variable to the South and S.W.; the land breezes are mixed up with them, and are not to be distinguished.

The sea breeze is mostly stronger and broader than the land breeze. This is the effect of vapour raised from the earth, and accumulated in great quantity during the day; condensed afterward by the coolness of the night, it falls, and causes the air to expand with greater force.

Vessels cannot always be certain of finding the land breezes at a certain time in making for the ports of Brasil. But, in general, on advancing southward, following the coast, the winds in the rainy season will be found between South and West, and between the *Alagou das Patos* and *Cape Frio* it sometimes blows violently from between S.E. and S.W., and from the N.W.; at times there are hurricanes, similar to the *Pamperos* of the Rio Plata, which are dreadful. Of these the prognostics are the same as of a European gale. If the sun sets environed with thick clouds, if the land appears very distinct, and seems to rise up, approaching the observer, you may expect the winds to blow from South to S.W. till it brightens up. Fortunately these gales do not long continue; when furious they rarely last more than 24 or 30 hours, and their strength and duration diminishes on approaching the Equator. When the S.E. or S.W. winds of the southern monsoon are moderate, they come strong from the eastward during the day, and approach the West during the night.

So soon as the wind approaches the East the weather always clears up; to the contrary when it turns toward the West, and the mist comes on more and more thick. The winds are stated to come from the eastward in all the tropical seas; this is their natural course; the interruptions or changes which occur, in advancing to the land, are nothing but the crisis when passing from one to another. At 7 or 8 leagues from the coast the general motions of the monsoons will be found.

Again, from a communication of *Lieut. John Evans*, (a) R.N., on a passage toward Cape Horn, we have the following remarks, dated 30th May, 1824. Wind steady at N.N.E.—“It appears to me, from all that I have heard and read on the subject, to be rather an extraordinary circumstance our carrying the wind from N.N.E. in the manner we have done, and are still doing, at this time of the year, in the parallels we are passing. After crossing the Equator we had the S.E. trade inclining more toward the East than could have been expected, with the sun having northern declination increasing; seldom blowing from the southward of S.E. and generally steady at E.S.E., until the 26th instant, when, in lat.  $20^{\circ} 2' S.$ , and long.  $38^{\circ} 11' W.$ , being about two degrees from the Brazilian coast, the wind hauled round to the northward and eastward, and since the 27th we have experienced it steady at N.N.E., generally falling lighter and lighter toward the evening, and freshening up again at night.

“While sailing along the Brazilian coast I was not so much surprised at the northerly inclination of the wind; although I believe that, during the months of the S.E. monsoon on this coast, instances have been very rare (I have never heard of one, although I have been several years upon the station,) of a ship sailing along the land, as we did, with the wind sometimes due North, and never to be eastward of N.N.E.; but now, that we have, since taking a departure from Cape Frio, increased our distance so much from the coast, our position being opposite to the deep bight that falls in westward, to the southward of Rio Janeiro, it certainly does appear to me a strange circumstance that the wind should still continue steady at this point, being entirely at variance with all the authorities I have consulted, with respect to the prevailing winds in this hemisphere at this season; neither agreeing with the southerly monsoon of the coast of Brasil, nor the S.E. trade in the open ocean.

“This northerly wind continued from  $20^{\circ} 2' S.$  and  $38^{\circ} W.$  to  $30^{\circ} S.$  and  $46^{\circ} W.$ , veering then to the N.W., round to the southward, and taking the sweep of the compass round again to the northward.”\*

The SEASONS of BRASIL may be considered as two only; the *Dry* and the *Rainy*.

\* See note on p. 1.



On all the *eastern* coast the dry season commences near the end of September, and continues until February, and, during the five months of its continuance, thunder-storms frequently occur, but it seldom rains.

The rest of the year includes the rainy season; though the rains are not so constant as fully to justify the name. On the *eastern* coast, the only months which may be thus considered, are May, June, July, August, and sometimes a part of September. On the *North* coast the periods vary; for the heavy rains there commonly begin in December; although, as on the eastern coast, they include May, June, July, and August.

**THE CLIMATE OF PARA.**—Situate immediately beneath the Equator the climate of Para is hot and sultry; the thermometer averaging throughout the day from  $84^{\circ}$  to  $89^{\circ}$  in the shade; and at night occasionally falling as low as  $75^{\circ}$ , with very heavy and copious dews, especially upon the river, wetting the boats as if a shower of rain had occurred. The river water is warm, generally  $84^{\circ}$ ; as the air cools in the evening it chills the surface of the water; and, in doing so, it emits steam or aqueous vapour into the cool atmosphere. Thus the fog, or mist arises from the warm water of the river, and is not a deposit of dew from the atmosphere upon a surface cooled by radiation. Precisely similar to what occurs in the colder regions of the North, when water is rapidly losing its temperature, previous to freezing, it smokes with steam, and emits a vast volume of vapour, not a drop being deposited on the land: and it is to this that we must refer the mists and fogs rising from the warm valleys, often before sunset, and not ascribe them to the deposit of dew from the atmosphere.

There is no difference of temperature throughout the year; the mean is  $84^{\circ}$ . As already shown there are two seasons, the wet and dry. The wet or rainy season commencing in the latter end of December, and continuing until July, raining, more or less, every day, for many hours, without intermission. The air is sultry and oppressive, with light variable winds, the most awful thunder and lightning, violent squalls of wind occasionally from different points of the compass, and tremendous heavy rain. Ships are often detained several months; not being able to take in their cargo.

It generally begins to rain about eleven o'clock in the forenoon, and continues until nine or ten at night. The early part of the morning from midnight is mostly fine. The thunder-storms take place, most frequently, in the afternoon, about two or three o'clock. The same circumstance occurs at Rio Janeiro. The period of the hour of the storms is not confined to this place, but occurs in many others. The country is flooded in many parts during the rainy season.

*The dry season at Para* is from July to December. During this period rain is a frequent occurrence, and thunder-storms likewise in the afternoon. This is the *windy season*, it blowing fresh from the N.E. during the day, with a light breeze only in the evening. Lightning is frequent in the horizon every night.

Although from the appearances of the banks of the Rio Para, its muddy beaches and masses of filth, it might be supposed to be the "centre of yellow fever," yet those who sleep on the river are generally healthy, and enjoy a fortunate exemption. Intermittent fevers or agues, however, attack new comers, and higher up the river they are more common. Those employed in the gathering of sarsaparilla are very frequently attacked with fever, and many natives die of it. Dysentery, tetanus, &c., are common. The small-pox, in 1825, is said to have destroyed 5,000 people, and to have proved the most destructive scourge they ever experienced. Hydrophobia is almost unknown.\*

**CLIMATE AT MARANHAM.**—The wet season commences at Maranham in the latter end of December, or the early part of January, and continues until June or July; during the whole of these months an immense quantity of rain falls, the most awful thunder-storms occur, in which lightning is remarkably vivid; the weather is oppressively hot, and the wind light and variable, veering all round the compass in the course of twenty-four hours. The dry season continues from July to December, in which period there is, generally, a fine fresh breeze from the N.E. or E.N.E. The nights are attended with lightning, but no thunder; and a few showers of rain sometimes occur.

The climate of Maranham is naturally hot, and, as at Para, there is little variation of temperature throughout the year, the average being  $82^{\circ}$ . The general range of the thermometer is from  $76^{\circ}$  at night to  $86^{\circ}$  in the day-time, even in the most shady situations. The barometer ranges from 29.92 to 30.1, the average being 30 inches, and the horary

\* Mr. Webster's Narrative of the Voyage of the Chanticleer, Appendix, pp. 339—342.

oscillation about the tenth part of an inch; it falls from 9 a.m. to 3 p.m., and does not appear to be affected by the fall of rain.

The climate here is generally regarded as healthy; the most sickly time being during the transition from the wet to the dry season, or about July. The wet season is not considered unhealthy.

In the province of *Scara*, or *Ciara*, to the East of Maranham, the droughts are occasionally severe. A few years ago some thousands of persons perished from the want of water. Many fled to Rio Janeiro and to Maranham, and the crops were nearly all destroyed.\*

The CLIMATE of FERNANDO NORONHA, though abounding in vegetation and moisture, is very healthy. The dry season commences in July, and continues throughout August, September, October, November, and December. The wet season is from January to June, inclusive. In the first three months of the rainy season thunder and lightning are common; and heavy surfs prevail, especially about Rat Island, at the same period when similar surfs prevail at Ascension and St. Helena, as shown hereafter, with the wind light and variable from the N.W. In the dry season there is, at times, a very scanty supply of water here, but, in the wet season, a little deluge.†

RIVER PLATA.—The climate of Monte Video is temperate, but fluctuating and tempestuous. It is much healthier than that of Buenos Ayres, and totally free from those marsh fevers which are common at the latter place, in consequence of its situation up the river. In winter slight frosts are sometimes observed, but no snow has been known to fall at Monte Video. The mean temperature of the winter is about 55°; that of the river-water at the same time being the same. The weather, during spring, is very variable and liable to storms. In the summer and autumn it is sultry and oppressive, especially during the long calms which take place; but in the middle of the day there is generally an agreeable breeze from the S.E. Northerly winds are accompanied by rain, and a S.E. wind is frequently so; but the wind from the S.W. is most free from it. Violent gales are common at all seasons of the year, attended frequently with thunder-storms; but these are most severe during summer and autumn. Sometimes the thunder-storms are accompanied by hailstones of a considerable size, which not only break windows, but kill poultry; they often terminate in a *pampero*, the well-known hurricane of the country. It is said that, in a *pampero*, sand and small gravel have been blown on board the ships in the roads, a distance of seven or eight miles from shore.

Mr. Webster has described the indications of a *pampero*, from his own observations, as follows:—The weather is sultry during a few days, with a light breeze from the East or N.E., ending in a calm. A cool light wind then sets in from the South or S.E., but confined entirely to the lower strata of the atmosphere, while the clouds above are moving in the opposite direction from N.W. to S.E. The northern horizon, as night advances, becomes dark with heavy lowering clouds, accompanied with lightning from East or N.E. The southern wind now ceases, and is followed by variable winds from the northward. Heavy clouds are thus brought over; and lightning, accompanied by thunder, follows in a most terrific manner. The wind veers gradually to the westward in violent gusts, the lightning becomes more vivid, and the thunder more awful; a gale of wind follows from the S.W. more violent, but of short duration, and fine weather ensues.

These *pamperos* are very destructive to shipping, and frequently occasion wrecks and the loss of boats. The lightning is beautifully coloured, presenting the hues of orange, violet, and pink. Mr. Webster adds, "I have also witnessed at Monte Video very remarkable instances of electric light, playing, like the *aurora borealis*, at an altitude of 20° above the horizon. One evening, October 4th, I observed an arc of light which remained permanent, with a tremulous motion, for the space of twenty minutes; a strong gale of wind was blowing at the time: it was of a pale yellow colour, and flashes of lightning frequently appeared beneath it. Meteors, or falling stars, are very rare, and earthquakes are scarcely known here."

## II. OF THE TIDES.

THE FOLLOWING DESCRIPTION of the TIDES commences with the Northern Coast of Brasil, from East to West; it thence proceeds with the Eastern Coast of the same, from North to South, and downward to the River Plata.

\* Voyage of the Chanticleer, Vol. II., p. 60.

† Idem, Vol. II., p. 26.



**NORTHERN COAST OF BRASIL.**—We are, as yet, but imperfectly acquainted with the tides on this coast, but the following remarks will serve to show that the time of flowing, or high water, is progressively later from East to West. At the entrance of the Jaguaripe or Aracati River, near the meridian of  $38^{\circ}$  W., the time of high water, on the full and change days, is about 5 h. Spring-tides here rise 8, and neaps 4 feet. The highest tide is two days after the full and change. The flood-stream outside sets constantly to the N.W. along shore, but is seldom stronger than two-thirds of a mile in an hour.

In the *Bay of Seara*, and coast next westward, very little tide is perceptible: but, between the *River Perçuizás* and *St. Anna's Isle*, near Maranham, there is a regular flow, setting directly on the coast, and which runs an hour longer than the ebb. It has been conjectured that there may be here an under-tow, always running to the westward. In the *Bahia, or River of St. Jozé*, on the East of Maranham Island, the tide sets with great strength: the flood from E.S.E., the ebb from W.N.W. High water at about 6 h. *p.m.*

From off the *Isle of Santa Anna* the flood sets from the S.W. into Maranham Bay; its rate in the offing is commonly more than half a mile in the hour; but, on advancing, its strength increases. In the harbour of Maranham the tide makes at least half an hour before it does outside. High water at about 6 h. 20 m.

At the *Island of St. Joaõ, or St. John*, the tide runs very strongly N.E. and S.W. High water at about 6 h. 24 m. *p.m.*

Navigators leaving Maranham, for the coast to the westward, have been advised to take three or four days after the full and change of the moon for the time of starting; as the spring-tide, at times, previously runs at the rate of four miles an hour.

Between *St. Joaõ* and *Salinas* (long.  $47^{\circ} 15'$ ) Captain the Hon. W. Wellesley, in H.M.S. *Sapphire*, found a strong easterly and south-easterly stream running off the shore. Whenever the *Sapphire* was at anchor hereabout the flood was found to set S.E., and the ebb East. The pilots say that this is always the case from December to May or June, owing to the heavy rains. The *Pickle*, schooner, ignorant of this particular, was set back from Atasia to the Bay of Turivazo, a distance, eastward, of nearly 40 leagues, and was unable for some days to make head against it. A French brig of war was likewise set in the same direction.

Near *Salinas*, during the rainy season, from September to May, the tide along the coast has been found constantly setting from S.E. to East. Between this and the *Rio Para*, the tides run very strong, and are very uncertain in their direction, owing to the numerous small rivers and banks in the vicinity, and more especially to the streams of the great River Marañon, which affect them on the West. High water at *Salinas* about 8 h.

On the *Braganza Bank*, off Point Tigioca, the time of high water appears to be from 10 h. to 10 h. 30 m. At *Para* it flows at 12 h. 5 m. *p.m.*, and vessels carry a regular tide up the river. In the port the tide runs with great strength, and without the river, to the N.W., the ebb stream runs strongly, until it is blended with those from the Marañon, which set more to the North.

**EASTERN COAST OF BRASIL.**—We now refer to the *eastern Coast of Brasil*, from Cape St. Roque southward, and find that, at Pernambuco and Bahia, or St. Salvador, the time of high water is 4 h. 45 m., and rise from 6 to 8 feet. In the harbour, or port of Cape Frio, the time is 1 h. 40 m., and the rise only 4 feet. In the channel, within the island of St. Sebastian, the time has been given as 2 h. 30 m., but the rise and fall here is scarcely perceptible, at least not regularly so, and the current sets according to the wind. Hence the tide at Rio Janeiro is so little that it seems to almost have escaped notice; but Captain Owen gives it as 2 h. 40 m., and rise 4 feet.

Within the harbour of St. CATARINE the ebb and flood are very unsettled, and seem to depend almost entirely on the wind. The flood sets in from the North, the ebb from the South; and, as the wind is almost always from the sea, the ebb, with a fresh northerly wind, is scarcely apparent, and seldom lasts more than two or three hours. The time of high water, at new and full moon, has been given at 2 h. 30 m., and the rise 6 feet.

In the RIVER PLATA, likewise, there do not appear to be regular tides, but currents, as uncertain in their duration as they are irregular in their rate and direction. In fine, settled weather, with moderate winds, a rise of 5 or 6 feet has, however, been found here.

## III.—OF THE CURRENTS.

The Currents of the Atlantic Ocean, northward of the Equator, in connexion with those to the southward of it, have been explained in the *Memoir*, &c., on the Atlantic Ocean, and we have the satisfaction of finding that various experiments since made have fully confirmed the previous explanation: more especially of *Equatorial Current*, setting westerly from the vicinity of the Line, along the North coast of Brasil, and thence into the Caribbean Sea. The inner edge, or southern border of this stream, appears to blend with the flood-tide setting westward, while the ebb, in a great part of the way, sets in a contrary direction along the shore, from West to East.

Between the meridians of  $40^{\circ}$  and  $50^{\circ}$  W., and the parallels of  $1^{\circ}$  and  $4^{\circ}$  N., the Equatorial Current has been found to set from N.W. to North; and [in September] N. by E.; and the northerly current has been described to prevail from longitude  $40^{\circ}$  to the coast, in the parallels of  $2^{\circ}$  to  $5^{\circ}$  North, so as to make it requisite, for those proceeding westward, to adopt, from May to October, a S.W. course, and from October to May, a W.S.W. course, in order to preserve the parallel.

H.M. ship *Sapphire*, on a cruise on and near the Line, found the Equatorial Current setting W.S.W. to W.N.W., but much weaker in longitude  $37^{\circ}$  than in  $43^{\circ}$ ; its greater strength being nearest to the land. In the month of April, 1815, it was found by the officers of H.M. ship *Leonidas*, near the meridian of  $40^{\circ}$ , and South of the Line, setting in these directions from 28 to 50 miles in the twenty-four hours; its greatest strength being in latitude  $1\frac{1}{2}^{\circ}$  South, and toward the coast.\*

In June, 1830, on the Equator, and in longitude  $40^{\circ}$ , Captain Geo. Cheveley found a strong Current N.N.E. of a mile and a quarter in the hour: a proof of its variable directions, according to the season.

In rounding the point North of Cape St. Roque, between Pernambuco and Seara, the Current was tried by the same commander, and found to set three miles an hour, taking off in a westerly direction, and decreasing to one mile an hour on approaching Point Macoripe. In the Bay of Seara the current set W.N.W., from one-half to three-quarters of a mile in the hour.

It appears from the preceding facts that, although the current in the outer offing, by which is to be understood the EQUATORIAL CURRENT, generally sets to the W.N.W. and N.W., yet here the phenomenon of parallel streams, flowing in opposite directions, is to be found. It is now clear that, within the inner edge or border of the Equatorial Current, the stream of the Tide and the in-shore Current, blending more or less, are variable; and the stream does not *always* set to the westward along the coast, as may have been supposed. Captain Livingston informs us that, in 1824, he found it setting strongly to the westward, near the meridian of  $38^{\circ}$  W., or eastward of SEARA, or where the *Inconstant* frigate, 1st of April, 1814, (as shown by chart,) was set N.  $73^{\circ}$  W., 47 miles in twenty-four hours. But, on proceeding next day, from Jericoacoara to the westward, the vessel was much retarded by an easterly stream, with a little inclination to the southward.

“Ours,” says Captain L., “was not a solitary instance; as I have heard many persons describe how they have been deceived by allowing for a westerly current; though all the old traders at Maranham own that, at times, and I think more frequently than otherwise, it sets to the westward.” All this, however, may easily be accounted for, when the course and operation of the tides are known.

*The Central Part of the Ocean*, North of the tropic of Capricorn, is under the immediate influence of the S.E. trade wind, which impels its surface waters to the westward. This immense drift sometimes reaches nearly home to the Brazilian shores; but, on approaching those shores, it appears more frequently to form a *stream* current, setting, in a counter-direction, along shore to the southward; and which is said to have been traced nearly from Pernambuco to Tierra del Fuego; but circumstances prove that it is variable, and always modified by the prevailing winds.

From the River Plata there is commonly a great outfall of fresh water, which has been

\* From the Island of Ascension, so famous as a nursery of turtles, many young ones, of the best quality, are carried by the Equatorial Current to the West Indies.



traced many leagues to the eastward, and which is lost in the variable currents found between the *westerly* or Central Drift on the North, and a wide *easterly* current, commonly prevailing between the parallels of  $30^{\circ}$  and  $35^{\circ}$  to  $40^{\circ}$  S.\* The last, denominated the SOUTHERN CONNECTING CURRENT, greatly facilitates the passage of ships bound to Australia and to ports of the Indian Ocean.

#### IV.—THE BRASILIAN CURRENTS.

On the Eastern Coast of Brasil the Stream Currents are varied according to the direction of the winds or monsoons, and the inclination of the coast. The *Baron Roussin* says, "As the winds do not impede the navigation of these coasts, neither do the currents. They generally follow the winds, according to their force and direction; for there is no river between Maranham and the Isle of St. Catharine powerful enough at its mouth to carry with it any sensible motion into the sea to more than one or two leagues from the coast. The winds are variable; so are the currents; their change is very quick. In these warm seas the waters are very clear, and they are disturbed by the first impulse given them. At the end of 24 hours, if the breeze be strong, you may observe a current running in the same direction. After a great number of observations on the currents we have estimated, more or less, their velocity along the coast, from the island of St. Catharine to Pernambuco, at six-tenths of a mile an hour in the two monsoons; it is often under that quantity, rarely above it; sometimes nothing. The velocity of the currents is more considerable in the southern monsoon than in the northern, because the wind is stronger in the first instance than in the other.

"But the velocity varies on different parts of the coast. Between the parallel of the Island of St. Catharine and that of the Abrolhos, or  $18^{\circ}$  S., and from two to ten leagues from land, the current is hardly to be discerned in any season. From the 18th to the 11th degree the waters carry you to the N.W. during the southern monsoon. From the 11th to the 9th degree it sets to the N.E. in the direction of the coast, quickening its motion. Passing the 9th degree, in proceeding northward, the waters carry you to the northward with greater velocity, which increases at times to the rate of 36 miles in the 24 hours, and is seldom less than 20. To the N.W. of Cape St. Roque it sometimes sets at the rate of 48 miles per day, the waters running W.N.W. in the direction of the coast.

"On passing Pernambuco, and in following the land to the northward, the currents and monsoons can rarely have any influence of consequence to navigation. More to the southward their effect is greater, and they may be considered as tides; these again are not important, as they do not extend far from land, and only affect vessels going to the small ports or creeks on the coast. Most of the great ports are subject to the regular tides.

"Adverting to what has been said on the winds and currents off the coast of Brasil, we must conclude, first, that between the isle of St. Catharine and Olinda, or Pernambuco, there is no permanent obstacle against navigation; and the recommendation to make the land to windward of the place you are going to is a matter of precaution to preserve yourself from all disappointment. Secondly, from the point of Olinda all along to Cape St. Roque, and thence to the isle of Maranham, prudence dictates that you should keep to the eastward of the point you would arrive at, after compensating in the track the effect of the currents carrying you to the W.N.W."

*Captain Hewett* says, "During the southerly monsoon the currents to the southward of Cape St. Augustin are not so powerful as to the northward, where they increase in strength until the months of June and July, and then gradually decline. On the contrary, in the northerly monsoon they are generally very strong to the southward of Cape St. Augustin, when they are weak to the northward, as they have some difficulty in detaching themselves from the stream, which runs from the S.E. trade around Cape St. Roque."

Mr. Lindley also notices that, "A strong current runs southward from Cape St. Augustin, commencing about the middle of October, and continuing until January; after

\* In the parallel of the Rio de la Plata, (December, 1823,) although 200 miles from land, we were daily carried by the current 39 miles out of our course toward the S.E.; so great is the influence of this mighty river at the distance of 240 miles from its mouth.—*Kotzebue*.

which there is no particular current till the middle of April, when a powerful one sets in northerly till July, and then subsides in like manner.\*

The currents of the River Plata, and other local currents near the shores, will be noticed hereafter.

*Extracts from Remarks on the Currents between the Coasts of Guinea and Brasil, made by Captain Edward Sabine, F.R.S., in 1822.\**

The Current called the *Equatorial Current* commences much farther to the eastward than is commonly imagined: and it appears that the island *Anno Bon* is always surrounded by it; while *Prince's Island* is equally surrounded by the *Guinea Current*. *St. Thomas's* being in an intermediate situation, the sea around it is occasionally influenced by both.

In consequence of the southing of the trade wind in the vicinity of the continent of Africa, the water impelled before it, which forms the commencement of the Equatorial stream, arrives from a more remote southern parallel, and is, therefore, of a cooler temperature than the drift water which successively falls into it from the S.E., impelled more obliquely to the meridian, and consequently arriving from latitudes less distant from the Equator. Thus the temperature of the stream varied from  $72\frac{1}{2}^{\circ}$  to  $74^{\circ}$ , whilst that of the drift current was  $77\frac{1}{2}^{\circ}$  and  $78^{\circ}$ .

But the more important distinction, both in amount and in utility in navigation, is between the waters of the Equatorial and Guinea Currents. These exhibit the remarkable phenomenon of parallel streams, in contact with each other, flowing with great velocity in opposite directions, and having a difference of temperature amounting to ten or twelve degrees. Their course continues to run parallel to each other, and to the land, for above 1000 miles; and, according as a vessel, required to proceed along the coast in either direction, is placed in the one or the other current, will her course be aided from 40 to 50 miles a day, or retarded to the same amount.

On the *BRASILIAN SIDE*, from Pernambuco to Cape St. Roque, the northerly current rapidly accelerated, until, in passing the Cape, it may be considered that the *Pheasant* had entered the full stream of that branch of the Equatorial Current which pursues its way along the northern coast of Brasil and Guyana to the West Indies. Between the noons of the 16th and 17th of July she was set  $44\frac{1}{2}$  miles to the North, and  $42\frac{1}{2}$  to the West; making a general effect, in the 24 hours, of N.  $44^{\circ}$  W. 62 miles: probably more northerly in the first part of the interval, and more westerly in the latter, than the general effect.

On the day after the *Pheasant* sailed from Maranham she entered the current, the full strength of which she had quitted to go to that place, and it was then found to be running with the astonishing rapidity of 99 miles in 24 hours. On the 10th of September, at 10 a.m., while proceeding in the full strength of the current, exceeding four knots an hour, a sudden and very great discolouration of the water a-head was announced from the masthead; the ship being in  $5^{\circ} 8' N.$  and  $50^{\circ} 28' W.$  (both by observation), it was evident that the discoloured water could be no other than the stream of the Marañon, pursuing its original impulse at no less than 300 miles from the mouth of the river, its waters not being yet mingled with the blue waters of the ocean, of greater specific gravity, on the surface of which it had pursued its course. It was running about 68 miles in 24 hours.

**BRASILIAN CURRENTS, CONTINUED.**—In the brig *Mary Brade*, on her homeward passage from Rio Janeiro, May 20 to 28th, 1823, Captain J. W. Monteath found the currents, &c., as follow:—

In latitude  $3^{\circ} 51' N.$ , long.  $25^{\circ} 30'$ , weather variable and squally, with rain throughout.

In	2° 33' N.	25° 5' W.	Current West, 29 miles.
0	14 N.	25 27 —	The same, 22 miles.
2	3 S.	25 43 —	The same, 30 miles.
4	29 S.	26 23 —	S. $77^{\circ}$ W. 27 miles.
6	53 S.	27 19 —	S. $72^{\circ}$ W. 41 miles.
8	50 —	— —	in 48 hours.
10	18 —	28 23 —	S. $72^{\circ}$ W. 12 miles.
12	8 —	29 7 —	S. $68^{\circ}$ W. 18 miles.
13	56 —	29 40 —	S. $54^{\circ}$ W. 25 miles.

\* The Remarks at large are given in the "Directory for the Ethiopic or Southern Atlantic Ocean."



In Decembér, 1825, Captain Monteath, homeward bound, found the Currents as follow :—

Lat. S.	Long. W.	Wind.	
7° 14'	34° 42'	East to E.S.E.	.. N. 82° W. 21 miles.
8 14	34 50	E.N.E. to E. by N.	.. S. 36° W. 22
8 58	34 53	E. by N. to N.E. by E.	.. S. 68° W. 26
9 1	35 1	E. by S. to E.N.E.	.. S. 15° W. 15
9 23	35 21	E.S.E. to East	.. West 14
9 44	35 41	E. by N. to E.S.E.	.. S. 72° W. 25
10 15	35 50	E. by N. to East	.. West 10
10 51	36 0		.. Not perceptible.
14 45	35 51	N.E. to E. by N.	.. S. 20° W. 20
13 55	37 10	N.E.	.. S. 9° W. 13
14 47	36 12	At noon, Dec. 9.	

In February, 1824, on his passage from Valparaiso, in Chilé, to Rio Janeiro, Captain Monteath experienced the Currents as follow :—

In 27° 13' S.	long. 39° 12'	Current South, 18 miles.
31 46 —	39 33	S. 80° E. 12 miles.
32 38 —	41 45	East, 28 miles. } Stream of
34 3 —	43 59	East, 30 miles. } La Plata.
39 45 —	47 58	South, 22 miles.
40 47 —	47 32	South, 20 miles.
40 34 —	47 54	South, 20 miles.

On a second voyage in 1824, on Dec. the 30th, in latitude 37° 29' S. long. 45° 8' W., the current was found to have set N.E.  $\frac{3}{4}$  N. 43 miles in the 24 hours. Next day, lat. 38° 24', long. 46° 40' N.E. by E.  $\frac{1}{2}$  E. 34 miles.

In latitude 40° 20', long. 48° 22', 11th of January, 1824, Current N.N.W. 24 miles. Temperature of the water, on the surface, 69°; at the depth of 120 fathoms, 62°. *No variation of the compass.*

## V.—PASSAGES FROM EUROPE AND FROM NORTH AMERICA TO THE PORTS OF BRASIL.

A commander bound from the Land's End of England to the coast of Brasil should, in the first instance, as in all other cases, attend to the aberration of his compass, according to the local attraction of his vessel, in order to be assured, as nearly as possible, of a correct reckoning; and then, making due allowance for the current or tide setting north-westward, athwart the English Channel, and the inset from the W.N.W. into the southern part of the Bay of Biscay, he should pass Cape Finisterre at the distance of 90 or 100 miles. He may thence steer toward the island of Porto Santo or Madeira, making a large allowance on his way for the current setting eastward, toward the strait of Gibraltar, and south-eastward toward the shores of Marocco, and still more southerly toward the coast eastward of the Canary Islands.

*If bound to Seara or Maranhã,* and it be not necessary to touch at the Port of Funchal, the best passage will be made, and much time saved, by passing to the westward of Madeira, the Canary and Cape Verde Islands, at a sufficient distance to avoid the calms produced by the high lands; as in this route steadier winds may be expected than those generally prevalent close to or among the islands.

On entering the parallels South of the Cape Verde Islands he will still be assisted by the N.W. trade wind, which may probably have commenced in the parallel of 30° or thereabout, and which will cease, according to the season, in from 12° to 3° North of the Equator: but here, crossing the Line in about 33° W., the ship will be farther assisted by the Equatorial Current, and may make her port as shown in the Directions hereafter.

The various circumstances which control the route, northward of the Line, are fully explained in the second section of our Memoir on, and Instructions for the Atlantic Ocean, in which the Winds and Currents are described. The trade winds, on the African

side of the Atlantic, will, as shown in that volume, commonly be found to commence in the parallel of  $26^{\circ}$  N., and in the summer, even in  $30^{\circ}$ .

To those who have not the work above mentioned to refer to, the following extracts may be acceptable.

The EQUATORIAL LIMITS of the N.E. Perennial or Trade wind, between the meridians of 18 and 26 degrees West, have been found, upon the comparison of nearly 400 journals, English and French, to vary considerably, even in the same months of the year. We have shown on the Chart, where the N.E. trade, according to the probable mean, may be expected to cease in the different months: but the annexed Table will be found to answer the purpose more precisely.

In this Table the columns of *Extremes* show the uncertain termination of the Trade winds, as experienced in different ships. The annexed columns show the *Probable Mean*: and the last column exhibits the mean breadth of the interval between the N.E. and S.E. wind.

Thus, the Table shows that, in the month of January, the N.E. trade has been found sometimes to cease in the parallel of  $10^{\circ}$ , and sometimes in that of  $3^{\circ}$  N. That the probable mean of its limit is about  $5^{\circ}$  N. That the S.E. trade, at the same time, has been found to cease sometimes at only half a degree North of the Line, and sometimes at 4 degrees. That the probable mean of its limit is, therefore, two degrees and a quarter. And that the interval between the assumed means of the N.E. and S.E. Trade winds is equal to  $2\frac{1}{4}$  degrees: and so of the rest.

TABLE SHOWING THE EQUINOCTIAL LIMITS OF THE N.E. AND S.E. TRADE WINDS, BETWEEN THE MERIDIANS OF 18 AND 26 DEGREES WEST.

N.E. TRADE WIND.			S.E. TRADE WIND.		INTERVAL BETWEEN.
CEASES,	General Extremes.	Probable Mean.	General Extremes.	Probable Mean.	Mean Breadth.
In January at ..	$3^{\circ}$ to $10^{\circ}$ N.	$5^{\circ}$ N.	$0\frac{1}{2}^{\circ}$ to $4^{\circ}$ N.	$2\frac{3}{4}^{\circ}$ N.	$2\frac{1}{4}$ degrees.
February ..	2 to 10 —	4 —	$0\frac{1}{2}$ to 3 —	$1\frac{1}{4}$ —	$3\frac{1}{4}$
March .....	2 to 8 —	$4\frac{1}{2}$ —	$0\frac{1}{2}$ to $2\frac{1}{2}$ —	$1\frac{1}{4}$ —	$3\frac{1}{2}$
April .....	$2\frac{1}{2}$ to 9 —	5 —	0 to $2\frac{1}{2}$ —	$1\frac{1}{4}$ —	3
May .....	4 to 10 —	$6\frac{1}{2}$ —	0 to 4 —	$2\frac{1}{2}$ —	4
June .....	$6\frac{1}{2}$ to 13 —	$8\frac{1}{2}$ —	0 to 5 —	3 —	$5\frac{1}{2}$
July .....	$8\frac{1}{2}$ to 14 —	11 —	1 to 6 —	$3\frac{1}{2}$ —	$7\frac{1}{2}$
August .....	11 to 15 —	13 —	1 to 5 —	$3\frac{3}{4}$ —	$9\frac{3}{4}$
September ..	9 to 14 —	$11\frac{1}{2}$ —	1 to 5 —	3 —	$8\frac{1}{2}$
October ....	$7\frac{1}{2}$ to 14 —	10 —	1 to 5 —	3 —	7
November ..	6 to 11 —	8 —	1 to 5 —	3 —	$4\frac{1}{2}$
December ..	3 to 7 —	$5\frac{1}{2}$ —	1 to $4\frac{1}{2}$ —	$3\frac{1}{4}$ —	$2\frac{1}{4}$

In the space of variable winds between the trades, exhibited in the last column, it has been found that southerly winds prevail more than any other: more particularly when the sun has great northern declination. Homeward bound East India ships are therefore enabled, at this season, to cross the space more quickly than those outward bound; which they do, in some degree, at all other times. Yet calms and variable winds are experienced in every month of the year, within this space; but the former, which are more generally in the vicinity of the N.E. trade, seldom continue long. These calms are frequently succeeded by sudden squalls; against which every precaution should be taken; as many ships have lost their topmasts, and have been otherwise damaged by them. Whirlwinds have sometimes accompanied these squalls in their first effort against the resisting atmosphere.



It has been stated as probable, that a gale of wind, or storm, never happens hereabout far from land, or near the Equator in the open ocean, on any part of the globe; although, in its vicinity, sudden gusts of winds and whirlwinds are sometimes experienced. S.W. and W.S.W. winds, with much rain, are frequent in July, August, and sometimes in June and September.

The heated land of Africa within Cape Verde, with the Cape Verde Islands, produce in the vicinity the variable winds, and occasional calms, which counteract the trade wind to a considerable distance from the coast. Hence it happens that ships, which approach too near the coast or islands, lose the trade wind sooner than those which keep at a greater distance. To guard against this it has been recommended to commanders to keep well to the westward when the N.E. trade fails; but some, in observing this precept, have crossed the Line too far to the West; for, meeting with the S.E. trade, hanging far from the southward, with strong westerly currents, they have made the coast of Brasil, and been obliged, in consequence, to tack to the eastward.

### PASSAGE FROM NORTH AMERICA OR THE WEST INDIES.\*

Vessels bound from AMERICA or the WEST INDIES to a port of the NORTHERN COAST of BRASIL are directed to make, and take a departure from the *Bermudas*, as the remotest point on that part of the course eastward. The most favourable time of the year is in the winter season, or from November to March, because strong *westerly* winds, then prevalent, will enable them to proceed so far eastward as to make a fair wind of the N.E. trade, should they obtain it.

Leaving the *Bermudas* a due East course should be made, inclining rather northerly, and so as to be sure of not getting too soon into the Trade, which extends, in summer, nearly as far as Madeira.

The winter months are, also, the best for making the coast; the weather, although rainy, being clear; the winds so moderate, that any part of the coast is safe to anchor on; and the currents are reported to have less strength than in the summer season.

Having attained the longitude of  $46^{\circ}$  on the parallel of  $30^{\circ}$  N., steer a S. by E. course, in order to get through the variables as soon as possible. These extend, in the winter months, over a much smaller space than at other seasons. The variation will keep the ship gaining to the eastward, and the Trade wind will allow her to be hauled up a point or two, should it be found necessary. Having the advantage of this wind a course must be assumed which shall bring you to the Equator under the meridian of  $40^{\circ}$  W., if bound to Maranhão, and proportionally more to the eastward if bound to a port more to the East.

But Captain Wellesley says, "If the passage be made in the summer time it will be better to keep, if possible, well to the northward and eastward until  $40^{\circ}$  W. is attained, in case variable winds should be met with, and the ship be driven to the westward. H.M.S. *Sapphire* experienced no perceptible current until near the Equator, when a slight westerly one was found, unless a wrong allowance was made for variation, which was found to decrease rapidly on advancing to it. It is to be borne in mind, also, that the variation changes from West to East at a little to the northward or on the Equator. The English traders to Maranhão cross the Line generally in from  $40^{\circ}$  to  $42^{\circ}$ , and this enables them to steer more directly for the land; whereas, if it were crossed in  $38^{\circ}$ , a course must be adopted not very different from the trend of the coast; and then, should a westerly wind spring up, embarrassment might ensue."†

### PASSAGE TO THE EASTERN PORTS OF BRASIL.

In the year 1820, Mr. Cubitt Springall, in the brig *Patty*, made a voyage to Pernambuco; and in adverting to this passage he says, "I crossed the Equator on the 24th of May, in longitude  $25^{\circ} 26'$ . This I am aware, from experience, is the best track for a

\* By Capt. the Hon. Wm. Wellesley, R.N.

† Nautical Magazine, 1833.

vessel bound to the eastern coast of Brasil; or say from  $25^{\circ}$  to  $28^{\circ}$ . On the second day after crossing the Line, in lat.  $2^{\circ} 36' S.$ , we found, by observations taken by three quadrants, that the ship was from 40 to 50 miles to the southward of her reckoning, which, of course, was attributed to a current in a S.S.W. direction, which continued with the track of the ship to latitude  $6^{\circ} 36' S.$ , longitude  $28^{\circ}$ ; then I found, by good observations, the current set equally as strong to the northward. On standing in, to make Pernambuco, with the southerly wind, which prevails from March to August, and being under the necessity of bringing up, I found the current to run at the rate of three and a half knots N.N.W. This was in five or six fathoms of water, about 30 miles to the northward of Pernambuco. The southerly current, which prevails from September to March, when the wind is from the northward, is not so strong as the northerly current.

"I sailed from Pernambuco on the 1st of August, and re-crossed the Line on the 6th, in longitude  $29^{\circ} 36'$ , and found a strong northerly current till in latitude six degrees North, which set the ship constantly to the northward and westward from 25 to 30 miles per day."

*Mr. John Luccock*, in his valuable and important volume on the Geography and Navigation of Brasil,\* has the following remarks on the passage, which may be advantageously compared with those above:—

"After passing the Cape Verde Islands, the mariner, who is bound to the southward, feels anxious about crossing the Line. Landmen, not aware of the circumstance, will probably be surprised to hear that, broad as the ocean is between the coasts of Africa and Brasil, a difficulty exists in clearing Fernando Noronha and Cape St. Augustin. With a good chronometer on board I should run boldly on toward the American coast, being careful only to avoid falling to leeward of Cape St. Roque, and into the heavy current which sets close around it. Without a chronometer, or knowledge enough to use it with advantage, I should allow, from 17 degrees of North latitude, a westerly drift, beginning with five miles for 24 hours, increasing the allowance until the latitude of five degrees be attained, when it should be at least 20 miles a day. From that parallel, to 13 degrees South, the drift will decrease, and then again become variable. If nine degrees South can be obtained, without seeing the land, the navigator may generally proceed with confidence, even close inshore, particularly in the months from October to March; for the daily land wind will carry him sufficiently out, while it blows, to render his passage easy and safe when the sea breeze returns; and close to the land he will find fewer calms than at the distance of 30 to 50 miles from it. Upon the coast of Brasil it may be taken, almost as a general rule, that the seabreeze blows nearly at right angles to the Line on the shore, reckoning from cape to cape; within the bights it frequently fails, and even strong south-westers do not always blow home. The period of the year which has been mentioned as most favourable for running down the coast of Brasil differs, I am aware, very considerably, from the opinions which prevail at the British Post Office; yet, when speaking of commercial affairs, I hope to prove that these months are best adapted for such a purpose. The allowances, too, for drift, which have been explained, it is obvious, ought to be influenced, in some measure, by accidental circumstances; the most important are the place where, and the direction in which we cut the current. The advice given above is most applicable to cases where the Equator is crossed in about 29 degrees of longitude, and the course steered directly upon St. Augustin. The cause of this mighty current, or marine river, is now well understood; but its strength, and, in some measure, its direction, which the navigator should carefully observe, depend upon the winds which have blown between either Tropic and the Line.†

"They are not so steady as has been sometimes represented, and seem to be very materially affected by the relative positions of the sun and moon. It is evident that both these luminaries produce a tide in the atmosphere; and sometimes counteract each other's influence. This occurs, in the smallest degree, when the new and full moons happen with the least difference in the declinations of the two bodies. In proportion as this increases, their operations on the air become disturbed; and every month a vessel, within the tropics, must be placed, unavoidably, between the foci or points upon which their influence most

\* "Notes on Rio de Janeiro and the Southern Parts of Brasil; taken during a residence of ten years in that country, from 1808 to 1818." 4to. London, 1820.

† A just idea of the nature of the Equatorial Current will prevent a commander from crossing the Equator too far to the westward in the southern passage; particularly at the season when the S.E. trade wind is very far squtherly; and when, also, the current runs so strongly to the westward, in the vicinity of Cape St. Roque, as to hazard a vessel's being driven to the leeward of it.



immediately falls. In such a situation she will probably meet with calms. The winds will freshen continually in proportion as the moon approaches and passes over her, or recedes and leaves the influence of the sun more predominant. Hence it seems, that the irregularities of the trade winds, so frequently noticed, and especially of the south-eastern trades, may be connected with the cycle of the moon, and return periodically. An attentive officer observes such circumstances, and endeavours to make use of them."

Whatever may be the anomalies or particular exceptions to the more general or predominant direction of the winds and currents, it is to be remembered that, "in whatsoever line or direction a portion of the current may move, it must rarely happen that it is neutral in respect of a ship's course; but that, on the contrary, it will either favour or impede it."

M. de Humboldt has noticed that, in the year 1803, several vessels bound from Cadiz to the Caraccas were forced to lie-to, in the 14th degree of North latitude, and the 46th of longitude, on account of a very violent wind, which blew for several days from the N.N.W. He adds, "What extraordinary interruption must we suppose in the play of the aerial currents to explain such a cross wind." Such anomalies as these serve, in some measure, to account for partial and contrary streams of water on the ocean.

PASSAGE of His Majesty's ship *Blossom*, Captain Beechey, from TENERIFE to RIO JANEIRO, June 3 to July 11, 1825, passing to the westward of the Cape Verde Islands.

"In June 1825, His Majesty's ships *Wellesley* and *Bramble* sailed from Santa Cruz for Rio Janeiro, and three days afterward the *Blossom* departed for the same place. About the same time the packet, the *Hellespont*, and another merchant vessel, made the passage from England. The *Bramble* crossed the Equator in  $13^{\circ}$  W., the *Wellesley* in  $25^{\circ}$  W., the packet in  $29\frac{1}{2}^{\circ}$  W., the *Blossom* in  $30^{\circ}$  W., the *Hellespont* in  $32^{\circ}$  W., and the merchant brig, of which I shall speak presently, in  $39^{\circ}$  W. The *Hellespont*, which sailed indifferently, was 46 days, the packet 46 days, the *Blossom* 36, the *Wellesley* 45, and the *Bramble* 48 days. Thus, making a reasonable allowance for the distance between England and Tenerife, the *Hellespont* made the best passage, the packet and *Blossom* the next, the *Wellesley* next, and the *Bramble* the worst; by which it appears that, in proportion as the vessels were to the westward the passages were shortened." The merchant brig, however, was too far to the westward, as she could not weather Cape St. Roque, and, like the *King George*, Indiaman,\* she was obliged to stand back to the variable winds to regain her easting, so that her passage occupied 110 days.

This passage is so frequently made that remarks upon it might be thought almost superfluous; but I am not disposed to undervalue this sort of information, which is in general too much neglected. There is no doubt that the route from England to Rio Janeiro ought to be varied according to the time of the year; for, even in the Atlantic, the trade winds are affected by monsoons, and it is only by a long series of observations that we can ascertain at what time of the year it is advisable to cross the Equator in any particular longitude. The journals of the packets for one year would afford valuable information on this subject. In the passage of the *Blossom* we carried the N.E. trade from Tenerife to  $8^{\circ}$  N., and met the S.E. wind in  $5^{\circ} 30'$  N. and  $25^{\circ} 50'$  W., which carried us to Cape Frio. The trades were steady, and in the northern hemisphere fresh.

From the time of leaving Tenerife until we lost the N.E. trade the current set S.  $54^{\circ}$  W. 115 miles in ten days, or at the rate of  $11\frac{1}{2}$  miles per day.† With the change of wind occurred an immediate alteration in the direction of the current, and the next twenty-four hours we were set N.  $86^{\circ}$  E. 23 miles. The meeting of the currents was marked by rippling of the water, which could be seen at a considerable distance. The four succeeding days the current ran between S.  $45^{\circ}$  E. and S.  $89^{\circ}$  E., at the average of thirteen miles per day.‡ During this time we changed our position from  $7^{\circ} 21'$  N. latitude, and longitude  $26^{\circ} 58'$

\* See our Atlantic Memoir, 9th edition, page 193.—Ed.

† According to the classification of currents, given in the Memoir on the Atlantic, this must be the "Drift Current from the N.E.," combined, in its southern borders, with the "Equatorial Stream."—Ed.

‡ The incipient portion of the Current which sets thence eastward along the coast of Guinea.

"During the African S.W. monsoon, from June to October, a great portion of the Equatorial Stream is diverted to the North, N.N.E. and N.E., even to the Cape Verde Islands."—See Memoir, 8th edit. page 190.

W. to  $3^{\circ} 56' N.$  and  $26^{\circ} 44' W.$ , and had the S.E. trade one day. We now got into a strong N.W. current, which ran between N.  $58^{\circ} W.$  and N.  $72^{\circ} W.$ , at an average rate of  $22\frac{1}{2}$  miles per day, until we made Fernando Noronha.\*

From *Fernando Noronha* the current changed its direction, and ran between S.  $78^{\circ} W.$  and S.  $21^{\circ} W.$ , at an average rate of 27 miles per day, until 100 miles due East of Cape Ledo.† We stood on to the southward; and as we neared the land about Cape Augustin the velocity of the current abated, and our daily error was reduced to seven miles S.  $52^{\circ} W.$ ; but as we drew off the land, still continuing to the southward, the current again increased, and became variable. The first hundred miles from Cape Augustin it ran S.  $87^{\circ} W.$  26 miles; the next due South, 27 miles; the following S.  $76^{\circ} W.$  21 miles; and then S.  $80^{\circ} W.$  eleven miles, until our arrival off Cape Frio, when the whole amount of current was 274 miles S.  $57^{\circ} W.$

From this it appears that the N.E. trades propelled the waters in a S.W. by W. direction, at the rate of  $11\frac{1}{2}$  miles per diem;‡ and the S.E. trades to the W.N.W., with double the velocity, or  $22\frac{1}{2}$  miles per day; and that in the intermediate space, where light variable winds prevailed, there obtained a current, which ran in a contrary direction to both these, at the rate of 13 miles per day.

It appears, from numerous observations, that in both hemispheres the rate of the current§ is accelerated on approaching the Gulf of Mexico; and as my route was rather more to the westward than that generally pursued, the above-mentioned average rates are greater, probably, than will be experienced under ordinary circumstances.

(Capt. Beechey's *Appendix*, pp. 628, 9.)

*Remarks on Sailing Westward of the Canary Islands, between the Cape Verde Islands, and toward the Equator, by Captain J. W. Monteath, in the Mary Brade, from Liverpool toward Cape Horn, April, 1823.*

April 2, 1823, at 4 p.m. the island *Palma* was in sight, bearing from S.  $25^{\circ} W.$  to S.  $78^{\circ} W.$ , distant about five leagues; next morning, at 7 a.m., the island *Ferro* was in sight, bearing S.E. by E.

We carried fresh and fair winds from N.E. to East, with a prevailing westerly current, until the afternoon of the 7th, when St. Antonio, the north-westernmost of the Cape Verde Islands, was discovered at 5 h. 30 m.: the N.E. point bore S.  $40^{\circ} W.$ , distant about five leagues, and the N.W. point S.  $66^{\circ} W.$ , distant 8 leagues.

At 8 p.m. shortened and hauled by the wind under easy sail, tacking ship every two hours to preserve our position, as I intended at daylight to run through the channel between St. Antonio and St. Vincent, in preference to running to the westward of the former island. The wind, notwithstanding our vicinity to the land, continued steady from North and north-eastward during the night.

At 5 h. 30 m. a.m., bore up under all sail. The wind, as we drew near the high land of St. Antonio, veered round to the N.W., || until we had fairly entered the channel, when it hauled gradually round to the N.E. and E.N.E., and continued to blow steady from that quarter until clear of the islands.

I have now to remark that this is the third time I have passed in the vicinity of these islands: in August, 1812, on a voyage to Rio Janeiro; in February, 1818, on a voyage to Calcutta; on both of these voyages I passed close to the westward of St. Antonio, without being becalmed, and also, this voyage, having carried the trade wind steady through the channel to the eastward of it. In future, if I have occasion to pass this way, I shall, in case the weather be clear, and a sight of the N.E. point of St. Antonio be obtained before dark, have no hesitation in running through the channel at night, with the greatest confidence, as there are no dangers except close in-shore.

\* In the *Equatorial Current*, see the present work, page 8.

† The Brazilian Current, setting to the S.W. See page 9.

‡ All the rates are averages.—*Original Note*.

§ That is to say, the *Equatorial Current*.—*Ed.*

|| This circumstance is also noticed by M. Frézier, in his *Voyage to the South Seas*.



We carried the breeze strong, all night of the 8th, from East; at daylight the islands of Fogo and Brava were in sight; the centre of Brava bearing E.  $\frac{1}{2}$  S. by compass. At 19 h. 15 m. the mean longitude, by four chronometers, was  $25^{\circ} 6' 34''$  W.; the North end of Brava bearing N.  $53^{\circ}$  E., and the South end N.  $73^{\circ}$  E. by compass. At 10 a.m. we were partially becalmed, having hauled up rather too near Brava; which island, from its height, intercepted the sea breeze: during this interval I lowered the boat, in order to ascertain the velocity and direction of the current; it was found setting N. by E. at the rate of 30 miles in the 24 hours; there being no bottom at the depth of 80 fathoms. At noon, the latitude by observation was  $14^{\circ} 38'$  N., the N.W. point of Brava N.  $25^{\circ}$  E., the S.E. point N.  $43^{\circ}$  E., the peak of Fogo N.  $65^{\circ}$  E. Angle of elevation of the Peak  $2^{\circ} 14'$ . The number of the *Holothiena Utricular* (Portuguese Men of War) was immense, and the sea completely discoloured with different kinds and sizes of the mollusca tribes. On the 8th of April, at sunset, we bade adieu to the Cape Verde Islands; the variation, by amplitude, being observed as  $14\frac{1}{2}^{\circ}$  W.

*Remarks on Sailing Westward of the Canary and Cape Verde Islands, and toward the Line. By Captain M. Flinders, 1801.*

"At daybreak, 9th August, 1801, the island Palma was in sight, bearing S.  $72^{\circ}$  E. true, 10 or 12 leagues. Albacores and bonitas now began to make their appearance, and the officers and men were furnished with hooks and lines, and our harpoons and fizzes were prepared. This day I ordered lime-juice and sugar to be mixed with the grog; and continued to be given daily to every person on board, until within a short time of our arrival at the Cape of Good Hope.

"We carried fair, and generally fresh, winds, until the 15th, in the morning, when St. Antonio, the north-westernmost of the Cape Verde Islands, was in sight. At eight o'clock the extremes bore N.  $69^{\circ}$  E., and S.  $13^{\circ}$  W., true, and the nearest part was distant four miles; in which situation no bottom could be found at 75 fathoms. A boat was observed near the shore, and our colours were hoisted, but no notice appeared to be taken of the ship.

"The north-west side of St. Antonio is four or five leagues in length, and rises abruptly from the sea, to hills which are high enough to be seen fifteen or more leagues from a ship's deck. These barren hills are intersected by gullies, which bore marks of much water having passed down them. By the side of one of these gullies, which was near the place where we lost sight of the boat, there was a path leading up into the interior of the island. The S.W. and South points are low; they lie N.  $14^{\circ}$  W. and S.  $14^{\circ}$  E., true, and are five or six miles asunder. Between them the land hollows back, so as to form somewhat of a bay, which, if it affords good anchorage, as it is said to do, would shelter a ship from all winds between North and E.S.E. We did not observe any beach at the head of the bay; perhaps from having passed at too great a distance.

"Some distant land opened from the South point of St. Antonio, at S.  $75^{\circ}$  E. true, which I took to be a part of the island of St. Lucia.

"During the three days before making St. Antonio, the wind varied from the regular N.E. trade to E.N.E., and as far as S.E. by E.; and, at about the time of making the land, it dwindled to a calm. For three days afterward it was light and variable, between North and S. E.; after which it sometimes blew from the N.W. and S.W., and sometimes from the eastward. These variable winds, with every kind of weather, but most frequently with rain, continued until the 23rd, in latitude  $11^{\circ}$  N. and longitude  $23^{\circ}$  W., when a steady breeze set in from the southwestward, and the weather became more settled and pleasant. The clouds were sufficiently dense to keep off the intense heat of the vertical sun, but did not often prevent us from obtaining daily observations for the latitude and longitude. At the same time with the S.W. wind came a swell from the southward, which made the ship plunge, and opened her leaks considerably.

"The south-western winds continued to blow, without intermission, and drove us, much against my inclination, far to the eastward, toward the coast of Africa. One or two attempts were made to go upon the western tack; but this could not be done, with any advantage, until the 2nd of September, when we were in latitude  $3^{\circ} 50'$  N., and longitude  $11^{\circ} 15'$  W. The wind had veered gradually round, from S.W. to South, as we approached

the African coast, to the direction of which it kept, at nearly a right angle. I had not fully adverted to the probability, that the winds blowing upon this coast would prevail to a greater extent at this season, than at any other time of the year; otherwise, as I wished to avoid Africa, I should have passed some degrees to the westward of the Cape Verde Islands, and probably have carried the N.E. trade to the 12th, or perhaps to the 10th degree of North latitude; and in 8°, or at farthest in 6°, the S.E. trade might have been expected."

ADMIRAL KRUSENSTERN'S REMARKS on crossing the Line, and passing through the Equatorial Current, have been given in the *Atlantic Memoir*, 8th edit. pages 239—242. On the 9th of February, 1804, the *Nadeshda* had arrived in 34° 38' S., and 47° 30' W. With winds previously veering from E.S.E. to N.N.E. the course was southerly. It blew very fresh, with gusts of wind and rain, and then again fair weather.

The ship advanced toward the South, until she attained the latitude above mentioned. At two a.m. the lieutenant who kept the middle watch observed a curious ripple of the water, occasioned by a current. It formed a line, stretching N.N.E. and S.S.W., as far as the eye could reach, and was, throughout, lighted up so strong, that, according to his description, it had the appearance of a fiery furrow. This was the true limit of the current, which, since our departure from St. Catharine's, had carried us fifteen miles a day to the S.W.

On the 10th of February, at noon, it was found that the current had set N.N.E. 17 miles in the vicinity of the River Plata, the mouth of which was passed at the distance of 240 miles; and by the time the ship had completely passed the mouth of this river, the current set 32 miles in the same direction as the preceding day, N. 28½° E. The weather was now most favourable, and the wind generally fair. In the parallel of 37° the first albatross was seen, and several storm birds. In that of 40° were seen several large beds of sea weed, which are generally supposed to denote the vicinity of land, but from which the ship was 600 miles distant.

## SECTION II.

### PARTICULAR DESCRIPTIONS OF, AND SAILING DIRECTIONS FOR, THE ISLANDS OF PORTO SANTO, MADEIRA, THE CANARIES OR CANARY ISLANDS, THE SARGASSO SEA, THE CAPE VERDE ISLANDS, FERNANDO NORONHA, ETC.

#### I. THE ISLANDS OF PORTO SANTO AND MADEIRA.

**PORTO SANTO, &c.**—Ships from the ports of Europe, when bound to Madeira, are recommended to make, in the first instance, the Isle of PORTO SANTO, and thence proceed for the Road of Funchal, on the track shown upon the particular plan given in the large Chart of the Atlantic. The land of Porto Santo is very remarkable, and may be seen, in fine weather, 15 or 20 leagues off. It first appears in two or three very high hummocks, by which it is distinguished from Madeira, and the little isles named the *Desertas*.\* On the S.W. side is a small town and good road, where water and refreshments may be had. This road is described as, in some respects, better than that of Funchal. The position of the village on the South side is given as lat. 33° 3', long. 16° 18½'.



*Porto Santo (a) bearing South, 14 miles, as taken by Captain J. W. Monteath.*

\* The highest hill rises to about 1600 feet above the sea. Bearing S.W. by W. 12 leagues, Porto Santo appears like two islands, detached and at a distance from each other.



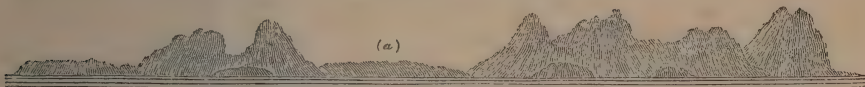
Large boats trade between Porto Santo and Madeira. Between the two isles the prevailing wind is generally from the N.E.

To the northward of Porto Santo there is a ledge of rocks, the position of which was ascertained by the officers of His Majesty's sloop *Falcon*, Lieut. J. Bowen, in January, 1802. The least depth upon them, according to the observations then taken, is  $4\frac{1}{2}$  fathoms. They are steep-to, and lie at the distance of 8 miles from the northernmost point of the island, with the N.E. point of Porto Santo bearing S.S.E.; the Ilheo da Fonte, or northernmost rock, S. by W., and the West point of the island S.S.W.

The bank extends East and West, *true*, nearly a mile and a half, terminating in a reef to the westward. The shoalest part, supposed to be a pinnacle rock, lies as above, or *nearly so*, the boat in which the bearings were taken being agitated by the sea.

There can be little doubt that this is the reef formerly said to lie 3 leagues to the N.E. of Porto Santo, on which a Dutch ship was lost.\*

A bank of rocks, on which the least depth is 40 fathoms, lies about three miles to the E.S.E. of the Ilheo de Serra, the south-eastern islet of Porto Santo.



Porto Santo (a) N. by E. 12 miles; taken by Captain Monteath.

**DESERTAS.**—The little isles, called the DESERTAS, on which there are a few fishermen's huts, are barren fragments of rock and earth, represented as lying nearly in a North and South [N.N.W. and S.S.E.] direction.

There are three of them, all very difficult of access, both from the heaviness of the surf on the beach, and the steepness of the cliffs. The interior surface of the Great or Central Deserta forms a hollow or valley, and is composed of loose rock, destitute of vegetation. Sea-fowl abound; and a guard of three soldiers, to prevent smuggling, is kept here.

The Table or Northern Deserta (*Ilha Chao*) is comparatively low and flat. It is generally covered with marine grass, and is farmed for the sake of the *lichen roccella*, or orchilla weed, which it produces. Here is, also, great plenty of shell-fish,—limpets and *cracas*, which are collected for the Funchal market. Rabbits, too, abound; and the stormy Petrels, or Mother Cary's Chicken, hide in the rabbit burrows.

At the distance of 10 leagues, and bearing W. by N., the Desertas appear separately; the middle one long, high, and nearly even; the southernmost, called the *Bujio*, in two hummocks, nearly as high, and about two-thirds of the length of the former. At the distance of 6 or 7 leagues, the northern islet becomes discernible, like a low wall: close to this is a high rock, the *Pyramid*, frequently mistaken for a ship under sail. Several outward bound West India ships were dashed to pieces, a few years since, by running on the Desertas in the night; the consequence of an error in dead reckoning.

\* \* It is probable that the *Falcon Rock* is the same with the *Eight Stones* formerly exhibited on the charts. It may reasonably be supposed, by the assertion of the old inhabitants, that this rock, or the troubled sea upon it, was formerly far more apparent and awful than at the present time; and that the pinnacle of this extensive Baxio, composed, as it most probably was, of basalt rocks, has, like others of the same nature, been undermined, and fallen into deeper water, the shoal in its extent affording now from 5 to 50 fathoms on it. Or volcanic agency may be still in operation, and have caused the subsidence of the vigia above mentioned, and which may also be connected with the phenomena met with to the westward, as follows:—

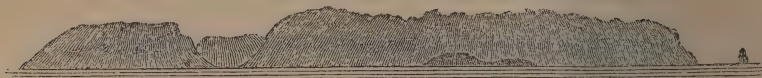
“On 29th December, 1841, in lat.  $34^{\circ} 44'$  N. and long.  $17^{\circ} 30'$  W., with a light breeze from the eastward, we experienced a very unaccountable but heavy swell from the north-east. It commenced about 3 h. *p.m.*, and at 8 h. had reached its height, breaking at times over the vessel in an alarming manner. We had not much wind for two days previous, nor had we a strong breeze afterwards till over the Line.

“It resembled as much the boiling of a cauldron as anything I could imagine, but was very unlike a sea or swell occasioned by wind. At midnight it had gradually subsided. All this time we had been rolling gunwales under on each side.”—*E. G. Tomkins; barque, Lady Mary. Naut. Mag., 1843, pp. 100 and 130.*

This communication is interesting, being so much in accordance with what was observed by Capt. Midgley just one year previous, in lat.  $33^{\circ}$  N. long.  $19^{\circ} 24'$  W., as described in the *Nautical Mag., 1843, p. 26.*

Between the Desertas and Madeira is a clear passage, eight miles broad, having no soundings, except at 50 or 60 fathoms, almost close over on the Madeira side. In the season of the breezes, (the N.E. winds, which prevail in summer,) a strong current sets through this passage to the south-westward.

The passage between the larger Desertas is clear, though bounded on each side by breakers, or rather by a surf; but it should not be attempted, unless from necessity, as it is very narrow, and has no soundings, or at least very deep water, in it; and a ship is subject to be becalmed in it by the northern Deserta, which overlaps the Bujio. This happened to a vessel of about 200 tons, which came through it in the night, having mistaken it for the broad passage to the northward.



*The Southern Deserta S.W. by W. 6 miles; taken by Captain Monteath.*

**MADEIRA.**—"Madeira may be shortly described as one mass of mountain, rising to the highest summits in the centre, descending on the North to a range of lofty cliffs, bounded by the ocean, and to a lower and gentler character of coast on the South. The island is riven throughout with deep ravines and valleys, which radiate to the sea in all directions." The cultivation is confined to the coast, or to the bottoms of some of the valleys, and occupies altogether a very small proportion of the surface. Vines form the chief feature; for the corn grown annually scarcely supplies a two months' consumption to the inhabitants.

The whole coast of the island presents a range of cliffs or headlands, varying in altitude from 200 feet to nearly 2000; for the most part of a dark volcanic aspect.

At Madeira is a wind called the *Leste*, which, as its name implies, comes from the East, although all East winds are by no means *Lestes*. It appears to be of the same kind as the *Harmattan* of Western Africa, and is of a hot, close, drying nature, particularly oppressive to some constitutions, whom it affects by langour, headache, and a parching of the skin and lips. What is remarkable, the residents are those whom it most disorders in this way. Visitors, in general, suffer much less; and the invalids are never so well as while it lasts. A peculiar clearness and cloudlessness in the atmosphere are among the invariable indications of *Leste*, and the weather during its continuance is most delightful; the sky of a deep blue, so stainless that one might fancy it had never been sullied by a cloud; with a transparency in the atmosphere which, like the effect of moisture, seems to bring out fresh hues from every object.

At times, but not frequently, the *Leste* is accompanied by a strong wind, but the weather is still delightfully warm and pleasant. The nights, too, are delicious; soft and balmy; and with the moon walking in summer brightness, and the orange trees in flower, the air is loaded with perfume. With the departure of the *Leste* rain almost invariably follows.\*

The capital of the island is FUNCHAL, on the S.E. coast. This place is not handsome,

\* The mean temperature, from observations during eighteen years, has been given as follows:—January, 64°.18; Feb., 64°.3; March, 65°.8; April, 65°.5; May, 65°.53; June, 69°.74; July, 73°.45; Aug. 75°.2; Sept. 75°.76; Oct. 72°.5; Nov. 69°.8; Dec. 65°. The year is, therefore, one summer, with comparatively little alteration either of temperature or hue.

"In fine weather, and it is fine at Madeira nine months in the year, the view of this steep and lofty island, covered with bright verdure, and enlivened by numerous scattered houses, as white as snow, is very striking to a stranger who arrives from the low and tame-looking shores of the south coast of England.

"Seamen are often deceived, when about to anchor in Funchal Roads, in consequence of the sudden transition which they have probably made from a low, shelving coast to an abrupt and high mountain side; for the bottom of the anchorage slopes away as suddenly as the heights overlooking it; and the anchor must, indeed, be let go upon the side of a mountain. Hence, ships seldom go close enough, unless guided by a person who knows the place: and many a chain cable ran out to the clinch, when chains were first used, owing to an incorrect estimate of the vessel's distance from shore, and not taking time to sound accurately.

"Closing the land quickly, after passing some time at sea,—approaching high cliffs or hilly shores, after being for a time accustomed to low coasts,—or nearing a flat shore, after the eye has been used to precipices and mountains, almost always is a cause of error in estimating distance, however experienced a seaman may be."—*Captain Fitzroy*, vol. ii. p. 46.



and strangers commonly consider it as ugly and inconvenient. It is true, that the streets are generally both steep and narrow; the former is rather the fault of the island, the whole coast of which is described as scarcely presenting an acre of plain surface; and as for their narrowness, it must be recollected that they are not, like those of any other place, intended for the passage of wheel-carriages; such a machine being unknown here; but for foot-passengers or horsemen, the streets of Funchal are wide enough, especially under so sunny a sky, and they are now generally clean. Their very steepness contributes to this quality, assisted by a copious little runnel of water, which is generally seen coursing down the middle to the sea; and the sound and sight of which are particularly grateful.

**POSITIONS.**—Point S. Lourenzo, the East point of the island, lies in latitude  $32^{\circ} 44'$  N., longitude  $16^{\circ} 38'$  W.; the town of Funchal (the British consul's garden) lat.  $33^{\circ} 38'$ , long. (well determined)  $16^{\circ} 54' 45''$ ; the West point of the island, Punta del Pargo, lat.  $32^{\circ} 49'$ , long.  $17^{\circ} 16'$ . Variation of the compass,  $21^{\circ}$  West.

The BAY of FUNCHAL is formed on the West by the *Pico* and *Punta da Cruz*; on the East by *Cape Garajao*, or the *Brazen Head*. The last is, by no means, the loftiest of the neighbouring cliffs; but as by its projection it forms the eastern horn of the bay, it becomes an object of constant attraction to all vessels from Europe having to round its point.

PUNTA S. LOURENZO is the easternmost part of Madeira. This point is a long narrow ledge of rock, about 6 miles in length, but in no part one in breadth. Its surface is exceedingly varied, but its general tendency is that of declivity from the cliffs and peaks on the North side, to a low rocky shore on the South. The cliffs and peaks, though lofty, are not nearly of so great elevation as those of the island in general, but are of a much more broken and fantastic character. Here and there a patch of herbage only affords scanty pasture to a few sheep or goats.

CAMERA DE LOBOS, a diminutive old town, stands at nearly 5 miles to the westward of Funchal. Here a ledge of black basaltic rocks projects and forms a kind of shelter for its little harbour. This place is interesting as the spot where the Portuguese discoverers first made their landing in 1420. In itself it is poor enough, but the sides of the mountains around are covered with *quintas* and vineyards, and are said to form one of the finest wine districts in the island. To the West of the town the cliffs begin to rise rapidly, till, at no great distance, they accumulate into *Cape Giram*, a magnificent headland, the loftiest of the island, being not less than 2185 feet above the level of the sea, which washes its base.

Beyond *Cape Giram* may be seen the perpendicular and majestic cliff called the *Ponta da Sol*. Near this, to the eastward, is the outlet, *Rubeiro Bravo*, and over it the chesnut-shaded village of *Campanario*. The *Ponta da Sol*, in a westerly gale and stormy weather, appears surrounded by the colours of the rainbow; hence, probably, its name has been derived. This cape is about  $3\frac{1}{2}$  leagues to the westward of Funchal.

ON THE NORTH COAST of Madeira, the *Penha d' Aguia*, or *Eagle's Rock*, is a vast insulated and somewhat cube-shaped mass or mountain of rock, which rises immediately from the sea, and stands out black and huge against it. Its height is estimated at not much less than 1000 feet. The summit is an extensive surface, cultivated, and shelving toward the sea.

The pretty little town of *Ponta Delgada* is the most considerable town on the North coast, and one of the liveliest and neatest in the island. It is built on a low and richly cultivated point of land, jutting out from the base of the mountain. The houses, which are numerous, and many of them large and respectable, are scattered thickly among the vines and orchards, and with very pleasing effect. The church, large and handsome, is close to the sea.

Although MADEIRA is so elevated, excepting the eastern end, which is a low rugged point, yet it is often so entirely clouded over as not to be visible at the distance of 5 leagues. But, when abreast of Porto Santo, the island commonly appears as one great mountain, with its summit hidden in the clouds.\* Shortly after appear the Desertas. Having passed those islands you will soon perceive the ships in the Road of Funchal; and, from their

\* Under the orders of Captain Charles Wilkes, commander of the United States exploring squadron, in 1838, a party of officers made an excursion to the summit of the Pico Ruivo, (the highest point of the island,) when, from barometrical observations, with excellent instruments, the highest point of the peak above the consul's garden was estimated at 6181 feet. The cistern of the barometer at the garden above the sea at half-tide, 56.6 feet. Total, 6237 feet.

riding, it will be seen how the wind is in the road, as it is common to have a strong breeze from the N.E. or East, on passing the Desertas, when, at the same time, the wind, in the road, is from the S.W. or W.S.W.

*When sailing in toward Funchal Road* a large rock, named the Loo Rock, with a fort on it, will be seen on the West side of the road, a little to the westward of the town. With this rock, N. by E., when in 38 or 36 fathoms, let go the larboard anchor, with two cables on it; for, should there be a fresh breeze from the eastward, it will be scarcely possible to bring up until the splice is veered a good way out. It is requisite to ride in the road with a whole cable, and with a splice so situated that you may be able to cut near it, should circumstances unfortunately compel you to put to sea without weighing anchor. While riding, keep a slip-buoy on the cable, have a kedge anchor, and a nine-inch hawser to the westward, to keep the ship steady, with the hawser on the starboard bow, as the wind generally veers from the eastward to S.W. and West. When the land wind makes a cross, the end of the hawser may be shifted.

The general anchorage is in from 30 to 35 fathoms, with the citadel (called the *Peak Castle*, a brown square fort on a hill over the N.W. part of the town) a little open to the eastward of the Loo Rock; the latter at the distance of half a mile.

With the Loo Rock and citadel in one, bearing nearly N.N.E.  $\frac{1}{4}$  E. and Funchal Steeple N.E.  $\frac{1}{4}$  N., the anchorage appears equally good, in 35 fathoms stiff ground. With the same marks, with the Loo about a mile off, there is good ground in 45 fathoms. To the westward, the ground changes to sand and rock, and to the eastward it has a sudden declivity from 50 to 55 fathoms, stiff clay ground, to 100 fathoms, rock, and then no ground.

*In case of a S.W. gale*, which may be frequently expected in winter, the situation with the Loo and citadel in one, or the citadel just open to the westward of the Loo, will be found most convenient. On the contrary, the citadel well open to the eastward of the Loo, is the best situation when a south-easter may be expected.

When coming into the road, with a brisk wind, sail should be reduced and secured in time, to prevent having too much way through the water, at the moment of anchoring; and ships should be brought up with their heads to seaward; for thus, in case of any accident in bringing up, sails may be had off shore, or otherwise, as required.

Mr. Finlaison, who wrote his remarks in 1821, has said, "It is generally reckoned the best anchorage for ships with the Brazen Head E. by S., Point de Cruz W. by N., Loo Castle, N.E.; but I would recommend ships to anchor at a good quarter of a mile to the westward of these bearings; as I am convinced that here is better holding ground, and clear of anchors. Ships should not anchor farther to the eastward than to bring the high fort [Peak Castle] on the *West* end of Loo Castle. With the fort open to the eastward of Loo Castle the ground is rocky, and has in it many anchors.

"*Those riding in Funchal Roads* should be very active when they observe a swell coming in from the S.W.; at this moment no time is to be lost in getting under weigh, for the swell indicates that a gale is certainly coming on; particularly so in the months of December and January, generally the commencement of the rainy season. Should it come on to blow very hard from the westward, the best mode is to run to leeward of the Desertas, where shelter from the wind may be found, and water perfectly smooth: thus you avoid the risk of losing sails, by heaving to windward."\*

*Off the Valley of Funchal* there are regular land and sea breezes, particularly during the summer; the sea breeze sets in from the south-westward some time in the forenoon; the land breeze sets off shore about ten o'clock at night, sometimes later, even to two or three o'clock in the morning: these breezes do not extend above 3 or 4 miles off shore; but, when it blows fresh in the offing, there is generally a counter breeze in the stream

\* Some of the old inhabitants affirm that there is no danger in attempting to ride out a gale from the southward, as it rarely continues long. It is said that no vessels with good ground-tackle have ever been lost by pursuing this method, and that many, in attempting to get away at the commencement of the gale, have been driven on shore.—*Voyage of the Chanticleer*, vol. i. p. 10.

Captain Fitzroy says, "The roadstead of Funchal is well known to be unsafe in S.W. gales; and there can be no doubt that the most prudent plan is to keep at sea while they last; but I have been told, by old traders to Madeira, that ships sometimes remain at anchor about half a mile from the Loo Rock, and ride out S.W. gales without difficulty; the under-tow being so considerable that their cables are little strained."—Vol. ii. p. 46.



of the Valley of Funchal; unless it blows hard, when the true wind prevails also in the road.

There is generally a surf on the beach, early in the year particularly, which prevents landing in a ship's boat anywhere, except within (to the north-westward of) the Loo Rock, about half a mile from the town; therefore the boats of that place are employed for goods, watering, &c. The tides rise and fall about  $7\frac{1}{2}$  feet; and the current along the South side of the island seems to be always governed by the true wind in the offing. The rainy season is in January, February, and March; October is also frequently a wet month, as well as November and December.

The road is open from the West to the S.S.E. The winds blow strongest here when from S.W. to S.E. Ships anchoring in the road in winter must be guarded against the consequence of a dark gloomy appearance of the atmosphere to the southward, with a swell setting in; for it is very dangerous to remain at anchor with these prognostics.

Squalls sometimes come fresh off the land; there is one instance of a hurricane down the Valley of Funchal blowing every ship out of the road, which was so violent, that the ships were hid from the town by the spray of the sea, although in a clear sun-shining day.

*The best way for ships*, however large or numerous, when bound into Funchal Road from the eastward, with the wind north-easterly, is through the passage between the Desertas and Madeira. The North-easter will carry them to the offing of the Brazen Head, the East point of the Bay of Funchal. In the night a single ship may keep over toward that bluff point, and, with her boats towing a-head, when becalmed, luff up into the stream of the land wind, and by that means fetch the anchorage. Ships must show a light at their ensign-staff in the night, to prevent being fired at from the forts and Loo Castle. In the day, they should keep farther distant from the land than in the night, to avoid being becalmed under it, and to gain the stream of the sea breeze. If, from over caution, or other reasons, they fall 2 or 3 leagues to the leeward of the road, they should then keep plying up in the stream of the valley, until they gain the vein of the sea breeze. In working in with a land breeze, it is best to make short tacks, opposite the valley; as here both the land and sea breezes are most regular.\*

Small vessels, from North America and the Western Islands, come in generally round the West end of the island; but are frequently becalmed a considerable time under the high land there. For this reason, ships, on leaving Funchal, should make sail with the land wind, and stand directly off from the road; ships bound to the southward, by taking a contrary method, having continued several days becalmed under the western part of the island.

In the winter months eddy-winds and squalls, proceeding from the high land, are frequent and severe, and the ships are often forced to put to sea from the road. Several westerly and S.W. gales, with rain, then frequently prevail, and prevent regaining it for some time. At these periods, Madeira and the Desertas are often obscured in fog. The squalls have been found so sudden and violent near the Desertas and about the S.E. end of Madeira, as nearly to overset the ships in the vicinity: and many have been driven by them far to the eastward.

With a gale at S.W., and a high sea rising, off the S.W. end of Madeira, a ship, in November, 1797, bore away to find shelter under the lee of the island; the weather dark with rain. Between Madeira and the Desertas, the ship was suddenly becalmed; then followed an eddy-wind from N.E., and the sea frequently over the bowsprit and jib-boom.

\* Admiral Mackellar says, in his Journal, "Of Funchal Roads, I shall only observe, that, in running for the Island, it is necessary to give the North end sufficient room; so as by nearing the land too much, you may not be becalmed, and thereby drift to leeward of the Roads, observing to open out the anchorage well before you haul in; and, if possible, drop anchor to the southward of the Loo Rock, in about 30 or 35 fathoms, nearly off the centre of the town; but frigates and smaller vessels may go close in shore, and anchor in 20 or 25 fathoms; my reason for choosing this anchorage is, that there is a truer land wind to get under weigh with, and a better drift, should you bring your anchor home; which, from the steepness of the bank, and the badness of the ground, often happens.

"The usual place of landing is the steps of the Loo Rock; and, though landing here is attended with some difficulty when the sea breeze sets in, it may generally be effected without much danger; in moderate weather the beach may be landed on, but I strongly recommend landing in the island boats. Refreshments of all kinds may be had, the prices depending much on the seasons, and the number of vessels in the Roads. In leaving Madeira, you should do it during the night, or early in the morning, as then the land wind blows right off, and you drift to sea, without risk, giving you time thereby to stow your anchors, and clear the land before the sea breeze sets in."

A dark cloud was now over head, and the ship near the land of Madeira. At this time two ships were seen 2 or 3 miles to the eastward, in clear sunshine, running before a sharp squall at S.W.

It has been said, that a southerly wind never blows hard quite home to Funchal, that the south-westers and south-easters are never expected unless in January, February, and the beginning of March; and that large ships almost always ride them out; but Captain Horsburgh has stated, that "these southerly gales sometimes blow quite home to Funchal, even in November and December: and, when they are apprehended, it is common for ships of every description to put to sea. These S.W. or S.E. gales are, in general, preceded by a swell in the road, often accompanied by gloomy weather, drizzling rain, and a very unsettled breeze from the land, veering backward and forward very suddenly. Under such indications, ships generally proceed to sea:" for, should it blow strong from the southward, it would be almost impossible to clear the shore; the anchorage being so close to the land. A few years ago several vessels were driven from the anchorage, and completely wrecked on shore.

The regulations of the port of Funchal require all ships before or immediately on anchoring to acquaint the governor of the island what they are, and their reasons for stopping there. Ships of war are not to send their boats to vessels coming into the road, until they are visited by the pratique-boat, a boat manned by persons appointed to enquire if any infectious disorder is on board. The same is to be observed respecting vessels that are departing, which are not to be boarded after the visiting officer has been to search for natives attempting to leave the island clandestinely, and for prohibited goods. English ships of war salute with thirteen guns, after an assurance of an equal return.

The boats may land on the beach in summer: but they are driven by a violent surge on the shore, which is shingly. The landing near the Loo Rock, before mentioned, is safe and easy, being defended from the surge.

It is necessary to be cautious of the shore-boats, which will come to the ship to sell fish, fruits, and vegetables, as their chief object is often the sale of the worst spirituous liquors to the seamen, and sometimes concealed goods. Fresh beef, water, and vegetables, are to be procured here for the ship's company, and are sent on board in boats belonging to the place.

There are two other anchoring places on the South side of the island; one is off Santa Cruz, which is exposed to the N.E. winds; the other is to the westward, where ships are commonly sent to perform quarantine. The latter is a small bay, to the eastward of *Ponta da Sol*, mentioned in page 21. The beach of the Quarantine Road, as also that of Funchal, is of blue stones and black sand.

## II.—THE CANARIES, OR CANARY ISLANDS.

This group of islands, supposed to be known to the ancients under the name of the FORTUNATE ISLANDS, were neglected by the moderns until the year 1402, when Jean de Bèthencourt, a baron of Normandy, took possession of Fortaventura and Lanzarote, for John, King of Castile. By the treaty of peace, between Ferdinand, king of Castile, and Alphonso, king of Portugal, it was agreed that these islands should belong to Spain, in lieu of the settlements on the continent of Africa, ceded to Portugal.

### POSITIONS OF THE ISLANDS.

	Latitude N.	Longitude W.
Lanzarota or Lançerote; Allegranza I. . . . .	29° 25' 30"	13° 30' 30"
Port de Naos . . . . .	28 58 30	13 32 30
Fortaventura; Isle of Lobos, on the N.E. . . . .	28 45 30	13 48 30
Point Jandia, the S.W. point . . . . .	28 3 0	14 31 0
Canaria or Grand Canary; the Isleta or N.E. point . . . . .	28 11 0	15 25 0
Point Arguineguin, the South point . . . . .	27 44 55	15 40 10
Point Aldea, the West point . . . . .	28 1 0	16 0 30



	Latitude N.	Longitude W.
Tenerife or Teneriffe ; Mole of Santa Cruz . . . . .	28° 28' 30"	16° 17' 14"
Le Pic or the Peak . . . . .	28 16 35	16 39 2
L'Orotava, on the N.W. side . . . . .	28 25 0	16 33 0
Gomera ; the port . . . . .	28 8 0	17 5 55
Palma ; Santa Cruz, on the East side . . . . .	28 4 30	17 44 28
Tasacorta, on the West side . . . . .	28 38 12	17 55 55
Ferro ; Port Hierro . . . . .	27 46 30	17 54 22
Point Orchilla, S.W. point . . . . .	27 42 20	18 9 45

**PRIVILEGED PORTS of the CANARIES.**—By an official notification, dated 9th Feb., 1838, "The port of *Santa Cruz*, in the island of Tenerife, was declared a customhouse port of the first class : that is, open for commerce of every description, national and foreign ; and also to have the privilege of a port of deposit of the first class. The port *Orotava*, in Tenerife, and the port of *Las Palmas*, in the island of Canary, are declared customhouse ports of the second class ; open for commerce of every description, national and foreign, with the privileges of ports of deposit of the like class. The *Puerto de Lau*, in the island of Palma, and the port of *Arriçife* (or *Recife*), in the island of Lanzarote, are declared customhouse ports of the third class ; open for the exportation of the productions of the country, of all kinds, and for any other class of merchandise, with cockets from the customhouses of the first and second class. The port of *Cabrasia* (Cabras), in the island of Fuertaventura, the port of *St. Sebastian*, in the island of Gomera, and the port of *Golfo*, in the island of Ferro, are declared customhouse ports of the fourth class, open for the exportations of the country, of all kinds.

"Every vessel, Spanish or foreign, that may arrive in the ports of the Canary Islands *in transitu*, that is, with the sole object of taking in water or refreshments, or repairing damages, shall not be subject to any charges, except fees for health visit, and those for the captain of the port ; the captains of such vessels being allowed, if in want of money to pay for the same, to sell part of their cargo for that special purpose ; the vessel being still treated as *in transitu*, and the effects sold and purchased being subject to the duties imposed by the tariff.

"N.B. The difference between the first and second class of ports of deposit is, that the former are open to the produce, if not especially prohibited, of all countries, whilst the latter are confined to national produce exclusively."

**DESCRIPTION, &c.**—The land of these islands is generally high, being variegated by volcanic mountains, among which that called the Pic, or Peak of Tenerife, is supereminent. The inequality of height is, however, so great, as to produce differences in the temperature of the different islands. For eight months in the year the summits, excepting those of Lanzarote and Fortaventura, are covered with snow ; yet in the valleys, and on the shores, the cold is seldom so great as to render fires necessary. A great proportion of the surface of the islands is covered with lava, calcined stones, and ashes, formerly emitted by volcanoes, the remains of which are still visible in all the islands ; and some of them, among which is the Peak of Tenerife, are not yet entirely extinguished. The number of inhabitants, in 1836, was 199,950. The productions, exports, and imports, may be found correctly described in most geographic works. The first discoverers found neither corn nor wine ; though, at present, there is plenty of both. Variation of the compass, 20½° West.

Vessels may pass between the Canaries, and through their principal channels ; as there is no known danger but what may be plainly discerned, excepting a sunken rock, laid down in some charts, in the southern part of the channel, between Tenerife and the Grand Canary, about eight leagues E.S.E. of the South point of Tenerife, and four leagues westward of the centre of Canary.

In sailing from Funchal to Tenerife keep well to the westward, steering S. by W. ¾ W. [*nearly South*,] in order to avoid the *Salvages*, which are very dangerous in the night.

If prevented from weathering the *Salvages* or the *Piton*, (described on the next page) by prevalent westerly and S.W. winds, common in the months of January and February, when a heavy swell may set the ship much to leeward ; you may safely bear up, and run to leeward of the Great *Salvage* ; only observing that, if the swell be very heavy, you must cautiously avoid three shoal spots, lying to the northward and eastward of that isle. Of these, the northern one is about three-quarters of a mile to the northward [*N.N.W.*] of the isle, the inner one on the N.E., 250 fathoms from it, and the outer, in the same

direction, one mile and one-tenth. Two others, with 3 and  $3\frac{1}{2}$  fathoms, lie at about half a mile from the eastern shore.

**The SALVAGES** consist of an island, named *Ilha Grande*, or the *Great Salvage*; a larger islet, named the *Great Piton*; and a smaller one, called the *Little Piton*; together with numerous rocks. The *Great Salvage* lies in lat.  $30^{\circ} 8'$ , and long.  $15^{\circ} 54\frac{1}{2}'$ . It is of very irregular shape, and has a number of rocks about it, within the distance of a mile.

The *Great Piton* lies at the distance of  $8\frac{1}{2}$  miles W.S.W.  $\frac{2}{3}$  W. [S.W. by W.] from *Ilha Grande*. This isle is  $2\frac{3}{4}$  miles long, N.E.  $\frac{1}{4}$  E. and S.W.  $\frac{1}{4}$  W., [N.E. by N. and S.W. by S.] and has a hill, or peak, near its centre. The *Little Piton* lies at a mile from the western side of the former, and is three-quarters of a mile long, nearly in the same direction: both are comparatively narrow. These isles are seated upon, and surrounded by one dangerous rocky bank, which extends from the western side of the Little Isle, half a league to the westward.

It has been said of the *Great Piton* that, in some respects, it resembles the largest Needle Rock at the West end of the Isle of Wight; and, at a great distance, looks like a sail. Its southern part appears green, its northern part barren. It may be seen 5 or 6 leagues off. The Little Piton is very flat, and is connected to the South point of the Greater one by a continued ledge of rocks. The whole of the eastern side of the *Great Piton* is rocky and dangerous.

**LANZAROTE** is very high, and its mountains may be discerned at a great distance. On approaching, it appears black, rocky, and barren, and it has many extinct volcanoes. From its northern extremity, in latitude  $29^{\circ} 15'$ , a barrier of precipitous cliffs rise to the height of 1500 feet, extend in a S.W. direction seven miles, and terminate in a sandy plain, where, in 1825, a volcanic eruption took place, and two considerable hills were thrown up, which were burning in 1835; a stream of lava, from 200 to 300 yards broad, found its way to the sea in the bay. The shore along all the N.W. side to the S.W. extremity of the island is high and precipitous, with the exception of a cove called *Janubio*, once a harbour for small vessels, but converted into a salt water lake by an eruption in the year 1765.

On the eastern side of the island the shore is much lower than the western: near the middle of it is the port of *Naos*, a small but secure harbour, formed by several rocky islets, and having two entrances, the northern with a depth of 12, and the southern of  $17\frac{1}{2}$  feet at low water, with a tidal rise of 9 feet. Two bomb-proof forts, the one mounting 11 and the other 12 heavy guns, defend the respective entrances. The town of *Arecife* is situate immediately to the southward of the port; many of its houses are large, and the streets are spacious; inhabitants about 2,500. The entire population of the island is estimated at 17,500.

The greater part of the inhabitants of *Arecife* are engaged in the fishery on the opposite coast of Africa, which gives employment to between 400 and 500 men from this island alone, about 250 from *Fuertaventura*, and proportionably from the other islands.

The highest land in *Lanzarote* is *Montana Blanca*, 2,000 feet in height above the sea, situate nearly in the centre of the island, and cultivated to the summit. The wine of this island is very superior to that of the other islands; the grapes are superior in flavour; the soil selected for their cultivation is decomposed scorïæ.\* Camels are used in *Lanzarote* as beasts of burden, on account of the scarcity of water.

**PUERTO DE NAOS, &c.**—Any vessel, not drawing more than 18 feet, may enter this port at high water, spring tides, and lie secure from all winds and weather; although, in sailing along the coast, the shipping appears as if at anchor in an open road, the harbour being formed by a ridge of rocks, not perceivable at any distance, as most of them are under water. These break off the swell of the sea, so that the inside is as smooth as a mill pond. As there is no other convenient place in the Canaries for cleaning or repairing large vessels it is much frequented, for that purpose, by the shipping trading to the islands.

On the West side of *Arecife* lies another port, called **PUERTO DE CAVALLOS**. This is also an excellent harbour, formed, like *Puerto de Naos*, by a ridge of rocks; but its entrance is shallow, there being no more than 12 feet of water in it, with spring tides. The

\* The preceding description is chiefly that of Lieut. Arlett, 1835.



castle, before mentioned, is built upon a small island between the two harbours, and so defends them both: this island is joined to the land by a bridge, under which boats go from one port to the other; or from Puerto de Cavallos to Puerto de Naos.

At the North end of Lanzarote is a large spacious harbour, called *EL RIO*, which is the strait, or channel, dividing this island from the uninhabited one called *Graciosa*. A ship of any burden may pass through this strait; for, if she keeps in the mid-way, between the two islands, she will have 6 or 7 fathoms of water all along.

The Rio is, in general, rather more than a mile wide, and forms the only safe harbour in the Canaries for large ships; but the extreme difficulty of communication with Lanzarote presents an insuperable obstacle to its being resorted to as a harbour of trade. Here basaltic cliffs rise almost perpendicularly to the height of 1,500 feet, and can be climbed only by a narrow path which winds along the face of the precipice; halfway up the cliff is the only spring of fresh water in the island, but rendered useless from its situation, except to a few goatherds. From the bottom of the cliff to the shore of Lanzarote is about two musket shots' distance. The ground in the space is low; and here is a salina or saltwork.

On the N.E. extremity of Lanzarote are two remarkable rocks, composed of black vitrified matter: but in shape resembling the "Needles" at the western extremity of the Isle of Wight.

If a smooth place to lie in, while the trade wind blows, be required, a ship coming into this harbour from the eastward must run a good way in, and double a shallow point, which lies on the starboard hand, taking care to give it a good berth; and this is easily done by approaching no nearer than in 4 fathoms; when past it edge toward Graciosa, and anchor in any convenient depth; for it shoalens gradually toward the shore, close to which there are two fathoms.

This is a commodious place, in the summer season, for careening large ships, for a man-of-war, of any nation, that happens to be at war with Spain, may come here and unload all her stores, &c., on the isle of Graciosa, and heel and scrub. Or, if two vessels chance to come in together, the one may heave down by the other; in doing which, they need not fear any opposition from the inhabitants, for there is neither castle nor habitation near this spot.

The water, however, is not so smooth here as at Puerto de Naos, especially if the trade wind happens to blow hard from the East, which sends in a swell that makes it troublesome, if not impossible, to careen a ship properly. But the wind here does not often blow from that quarter; those winds which mostly prevail being from North and N.N.E. In mooring here, great care must be taken to have a good anchor, with a large scope of cable toward Lanzarote; for in East and south-east winds heavy gusts or squalls come from the high land, of that isle. In the winter the wind sometimes shifts to the S.W.; then it is necessary to weigh, and run back to the eastward, round the shallow point before mentioned, until the ship be sheltered from that wind, and there anchor.\*

**THE LITTLE CANARIES.**—The isle *ALLEGRAZA*, the northernmost of the Canary Islands, is composed of lava and cinders, the remains of an extinct volcano. It rises to the height of 939 feet above the sea. The edge of the crater is well defined, and two-thirds of a mile across: its bottom is cultivated for barilla. The western cliffs are precipitous, and 700 feet in height. About 40 persons were resident on the island in 1835, principally employed in collecting orchilla.

The only landing place is on the South side, where a cavern extends, about 500 paces, slanting from the sea; and terminates in a little sandy bay, open above. At the entrance the rocks form a natural jetty. The village is situate immediately above, and abreast is the only anchorage, half a mile from shore.

*GRACIOSA*, forming the North side of the Rio of Lanzarote, is about 5 miles in length and 2 in breadth; and, as may be inferred from its appearance, it is destitute of water. *Allegranza* is 7 miles to the northward of it.

About 8 miles to the eastward of Allegranza and Graciosa stands the *Roca del Este*, or the East Rock, the craggy summit of an extinct volcano. The *Roca del Ouest*, or West Rock, is composed of a mass of lava, three or four fathoms high, and covered with scoræ, resembling coke. Many ships have been wrecked upon these islands in the night, being misled by errors in their reckoning, and by the currents.

\* Particular plans of this Strait, and of the harbours of Naos and Cavallos, are given in our Chart of the Azores, &c.

**FUERTAVENTURA**, or FORTAVENTURA.—This island is divided from Lanzarote by the channel named *Canal de Bocayna*, which is six miles in breadth; the island, as shown by the chart, is singularly formed, and variegated: it is less mountainous than the other islands, yet both the northern and southern extremities rise to 2,500 feet above the sea.

It has two ports of trade. *Cabras* on the East, and *Tarajalejo* on the S.E.; but *Cabras* contains little more than 1000 inhabitants. The anchorage at the latter is indifferent, and at the landing place a beach of shingles, still worse. The exports shipped hence consist of barilla, orchilla, corn, camels, honey, and goatskins.

Lieut. Arlett says, that although the general feature of Fuertaventura is extreme barrenness, still there are many spots of great fertility; the most conspicuous of these is the valley of *Oliva*, towards the North end, where there is a village of the same name, the residence of the Lieut.-Governor, a descendant of the Baron Bèthencourt, who possesses a very considerable portion of the island. The valley of *Oliva* is about 15 miles long, and generally from two to three wide. The only two streams of pure water in the island have their rise in the mountain of the *Atalaya*, or watch tower; they are husbanded with great care, and irrigate the whole of the valley.

On the South side of the eastern entrance of the *Bocayna*, very near the N.E. shore of Fuertaventura, lies the little island of *Lobos*, or Seal's Isle, which is about one league and a half in circumference, uninhabited, and destitute of water. Near this isle is a good road for shipping; the mark for which is, to bring the East point of *Lobos* to bear nearly N.E. by N., and anchor halfway between it and Fuertaventura, or rather nearest to the latter. Although this road seems to be open and exposed, yet it is very safe with the trade wind, for the water is smooth, and the ground everywhere clean, being a fine sandy bottom. Directly ashore from the road, on the shore of Fuertaventura, is a well of good water of easy access.

Through the broad channel, *La Bocayna*, ships sail very safely, as it is deep in the middle, and shoalens gradually toward Lanzarote, near to which are 5 fathoms of water; but very near or close to *Lobos* the ground is foul and rocky. In this passage, vessels of any burden may find room enough to ply to windward, and there is no necessity of approaching too near to *Lobos*.

When a vessel comes from the eastward, with the trade wind, and is passing through the *Bocayna*, to the westward, so soon as she brings a high hill on Lanzarote directly to windward of her she will be becalmed, and soon have the wind at S.W. Should this happen make short tacks until you obtain the trade again, or a constant northerly wind, the first puff of which will come from West, or W.N.W. So soon as this is perceived you must not stand to the northward, otherwise you will immediately lose it again, but must steer toward *Lobos*; for the nearer you approach this isle the more will you have the wind; so that, before you are two-thirds over, you will meet with a steady wind at North, or N.N.E.

When there is a great westerly swell hereabout the sea breaks horribly on the rocks at the N.W. end of *Lobos*. Captain Glas affirms that he has seen breakers there nearly 60 feet high; of which, were one to strike the strongest ship, she would be staved to pieces in a moment. "When I first saw," says Captain Glas, "those mighty breakers, our ship had just passed through the channel, between Fuertaventura and *Lobos*; we had a fine brisk trade wind at N.N.E., and, although there were no less than 10 fathoms of water, when we came into the westerly swell, yet we trembled lest the waves should have broken, and thought ourselves happy when we got out of soundings. We heard the noise of these breakers, like distant thunder, after we were past them 6 or 7 leagues."

*Point Jandia* or *Handia*, the south-western extremity of Fuertaventura, is a low rocky point, placed by the Chev. de Borda in lat.  $28^{\circ} 4'$ , long.  $14^{\circ} 31'$ , and by Lieut. Arlett in  $28^{\circ} 3'$ , and  $14^{\circ} 32'$ . A rock lies at half a mile from it to the S.W.

**CANARIA**, or GRAND CANARY.—The *Isleta*, or N.E. point of this island, lies 16 leagues N.W. by W.  $\frac{1}{4}$  W. [*W. by N.*] from *Point Handia*, the S.W. end of Fortaventura; and, in clear weather, either of these islands may be seen from the other. The centre of *Canaria* is exceedingly high, and full of lofty mountains, which tower so far above the clouds as to stop the current of the north-east wind that generally prevails here; so that, when this wind blows hard on the North side of the mountains, it is either quite calm on the

other side, or a gentle breeze blows upon it from the S.W.\* This island is the granary of the Canarian Archipelago, and has, in some districts, two wheat harvests in the year, one in February, and the other in June.

On the north-east end of Canaria is the peninsula called the *Isleta*, 2 or 3 leagues in circumference; the isthmus, by which it is connected with the main island, is about 2 miles long, and a quarter of a mile broad at the narrowest part. On each side of this isthmus is a bay, which, being exposed on the N.W. side to the swell of the sea, is, therefore, an unfit road for shipping; but small barks get in between a ledge of rocks and the shore, and lie there smooth and secure from all winds and weather. Here the natives repair their small vessels.

On the other side of the isthmus is a spacious sandy bay, called by some, *Puerto de Luz*, and by others, *Puerto de las Isletas*, from some steep rocks, or islets, at the entrance of the bay, toward the N.E. This is a good road for shipping of any burthen, with all winds, except from S.E., to which it is exposed; but that wind, which is not common here, seldom blows so hard as to endanger a ship.

The landing place is in the very bight or bottom of the bay, where the water is generally so smooth that a boat may lie broadside to the shore without danger. Thence, along shore, about a league to the southward, is the city of *PALMAS*, the capital of the island. Shipping, that discharge their cargoes at *Palmas*, generally anchor, in good weather, within half a mile of the town, for the quicker dispatch; but that place is not a good road.

The next port of any consequence in Canaria is *Gando*, situate in the middle of the East side of the island. It is a good place for shipping with all winds, except from the southward; and there good water, with other refreshments, may be had.†

*LAS PALMAS* is a large, handsome town, containing 18,000 inhabitants. It has a cathedral, hospital, and college, with convents of different orders. It is well supplied with fountains in all the principal streets; and its market likewise is well supplied. The city appears to great advantage from the sea, the streets rising regularly above each other, which gives it a very commanding aspect. It extends, at least, a mile in length. There is another large town, with a lofty church, about 4 or 5 miles to the southward, which stands considerably higher and more inland than *Palmas*. From the number of houses seen, while sailing along the island, it has the appearance of a considerable population, and of being well cultivated.

*CANARY* affords more anchorages than any of the other islands; the bank almost everywhere extending farther. During summer there is here a constant N.E. wind: the land, obstructing its course, causes the calms which prevail off the S.W. shore to the distance of 8 or 9 miles, when the aerial currents again unite. Within this space a westerly current runs close in shore, which is advantageous to coasters.

*El Cumbre*, or the summit of the highest peak of Canary, has been stated by Lieut. Arlett to be 6,648 feet above the level of the sea. The mountain *Sancillo*, near the centre of the island, which has a large wooden cross on the summit, 6,070 feet.

**TENERIFE**, or TENERIFFE.—Point Naga, the N.E. end of Tenerife, bears N.W.  $\frac{3}{4}$  N. [*N.W. by W.*]  $15\frac{1}{2}$  leagues from the north-east point of Canaria; but, from the western part of Canaria to the nearest part of Tenerife, the distance is 10 leagues. In the centre of the island is the famous peak, called, by the ancient and present inhabitants, the *Peak of Teyde*.

On coming toward the island, in clear weather, this peak may be clearly discerned at a great distance;‡ it first appears like a thin blue vapour, or smoke, very little darker than the sky; at a farther distance the shade disappears, and is not distinguishable from the

\* A description of these calms is subjoined to the present section.

† The pilots of Tenerife assert that a rock, with only 12 feet of water over it, lies W.N.W.  $2\frac{1}{2}$  leagues from point Aldea, the western point of the Grand Canary, and that the sea breaks on it in rough weather. Its precise situation appears to be unknown.

‡ They say, in the Canaries, that the Peak, in very clear weather, is seen from *La Boycayna*, or the channel between the Isles of *Lanzarote* and *Fuertaventura*, at the distance of about 50 leagues.

“The Peak of Tenerife is probably the most striking monument of nature in the world; for though the *Chimborazo* (in South America) soars to the height of 22,000, and the *Himalayan Dewalgiri* (in Asia) to the astonishing height of 27,600, while Tenerife is but 12,176, yet the latter, by its arising directly from the level of the sea, is seen more conspicuously, and stands at a more magnificent elevation. The view from the summit, which it requires a whole day to ascend, is unspeakably grand. On the top of this vast pyramid of basalt is a crater forty yards deep, from which vapour



azure of the firmament. Before you lose sight of this towering mountain, it seems at a considerable height above the horizon, although, by its distance, and the spherical figure of the earth, all the rest of the island, the upper part of which is exceedingly high, is sunk beneath the horizon. But, in general, in sailing towards Tenerife, when the trade wind blows, the island appears as a haziness of the sky, or as a cloud, till within the distance of 5 or 6 leagues, and then the headlands show like land, and are first conspicuous.

TENERIFE presents to the curious eye the most singular object, perhaps, in the northern hemisphere. The island appears, on sailing along the coast, from North to South, to have once been a complete cinder; and presents to view a great deal of the brokenness and irregularity of half consumed coke. This resemblance, however, contrary to expectation, becomes less perfect as we approach the peak, the great chimney of the fiery cauldrons boiling beneath.

At a short distance from Point Naga, the N.E. point of Tenerife, are some high perpendicular rocks; and 4 or 5 leagues thence, on the East side of the island, is the bay, or roadstead of SANTA CRUZ, the most frequented of any in the Canaries.\* The best road for shipping here is between the middle of the town and a fort or castle, about a mile to the northward of it. In all that space ships anchor, from a cable's length distance from the shore, in 6, 7, and 8 fathoms of water, to half a mile, in 25 or 30 fathoms. Particular care must be taken, in going in, not to bring any part of the town to the northward of West, lest calms should be occasioned by the high land under the Peak; otherwise you will be in danger of driving upon the shore; and, when ashore, will have no ground on the opposite side of the ship, with 200 fathoms of line, so that anchors and cables are of no use.

When a ship lies any time in the road it is necessary to buoy her cables, otherwise the ground, being in some places foul, may chafe and spoil them. Here vessels, if moored with good cables and anchors, may lie securely in all winds, although the bay is exposed and open to those which blow from the N.E., East, and S.E.; however, it is not above once in the space of four or five years that they blow so hard as to cause any considerable damage. The surf frequently beats on shore, with great violence, for several days together.†

DIRECTIONS FOR SANTA CRUZ.—While running for the anchorage keep both leads going, and bring up to the northward of the Mole-head; or, bring the clock-front of the square church with a *cupola*, W.N.W., and anchor with this mark on, or to the northward of it. Another good anchoring mark is *not to bring the Mole-head anything North of W.N.W.*

continually ascends, and specimens of finely crystallized sulphur are gathered round its lips. From this summit, when the sky is unobscured, the whole island is seen like a model. Rising round it, at a distance, are seen the Canaries, glittering on the horizon, their peaks and pinnacles coloured by every change of day. At favourable times Madeira and the African coast are visible."—*Captain Alexander, 1837.*

M. de Humboldt says, "It may be admitted, in general, that the Peak of Tenerife is seldom seen at a great distance in the warm and dry months of July and August; and that, on the contrary, it is seen at very extraordinary distances in the months of January and February, when the sky is slightly covered, and immediately after a heavy rain, or a few hours before it falls."

\* QUARANTINE REGULATIONS, 20th Nov. 1832.—On the appearance of a British ship a boat with a pilot, and carrying the Royal Spanish flag, will leave the mole, and point out the quarantine anchorage. If from circumstances it should be necessary to anchor before communication can be had with the boat, the line of quarantine anchorage is S.E. and N.W. by compass, with the mole-head, (nothing to the North of it); distance from two to six cables' length from the land; the depth of water 10 to 20 fathoms, rocky. Anchorage to the North of the line stated is for vessels admitted to free pratique. No ship is to lower boats or communicate in any manner whatever until visited by the health boat and permission obtained. Ships, bound to any port in any of the Canary Islands from infected countries, must come to this bay, which is exclusively appointed for the observance of quarantine.—*Santa Cruz, Tenerife, 20th Nov., 1832.*

† The BAY OF SANTA CRUZ is much exposed to all winds between E.N.E. and S.W. by W.; and, as the easterly winds are very prevalent, there is generally a great swell setting in, although it seldom blows hard from that quarter of the compass.

"In 17½ fathoms, fine sand and blue clay, directly off the jetty, with the end thereof on with the gateway leading into the town, bearing about N.W., is a convenient berth for watering, and good ground.

"The jetty is built on a curve, to break off the swell, for the convenience of boats, being the only landing-place, where all goods are landed and shipped. Ships generally lie off the jetty, in from 17 to 35 fathoms, good holding ground. The best mark is the high square building like a light-house just over and in one with the mole or jetty-head.

"Tide rises about four feet; sets round the bay.—H.W. 4 h. 30 m. (?)—*Mr. Wm. Wood, II.M.S. Tartar, 1823.*

Ships may anchor when in less than thirty fathoms. Give a large scope of chain cable. When the northernmost fort (Fort Paso Alto) bears N.N.E., the depth of water will be about 25 fathoms on the lines pointed out. The shore may be neared without risk, the water being deep, and no dangers that are not apparent. The anchorage to the South of the lines indicated is reserved for vessels in quarantine. Variation,  $22^{\circ} 48'$  West.\*

The water is easily procured when the surf is not great on the beach. A good supply of wine may also be readily had.

Captain Fitzroy says, "About noon, (Jan. 6, 1832,) we approached the sun-burned, uninviting town of Santa Cruz, lying upon a level arid space, at the foot of the hills that rise slowly to a considerable height, so as to shut out the more elevated part of the island; hardly a tree to be seen, and no appearance of cultivation; guarded by a rocky shore, on which there is always a disagreeable, often a dangerous surf: it offers, indeed, little to tempt delay; but, notwithstanding this unpromising exterior, and a port so exposed that Spanish ships of war were ordered by their Government to moor there with four anchors, there is much to be found in the higher and interior part of Tenerife which amply repays the labour of ascending to and exploring those regions."—Vol. ii. p. 48.

Captain Owen has said, Our approach by night [towards Santa Cruz] was past a line of fishing boats, each of which had a fire of Canary pine at the bow and stern, which produced a beautiful effect; and as they anchor to fish on the outer verge of the bank, they are good marks for vessels, being sure of soundings when in the same line with the fishermen's lights. Immediately on anchoring they brought their fish alongside for a market. It consisted principally of a species of horse-mackerel, caught with rod and line.

"Upon the arrival of the Russian frigates toward the Road, in 1803, Don Carlos Adam, Lieutenant of the Spanish Navy and Captain of the Port, came immediately on board, and recommended us to keep to the eastward of the road, as the best place of anchorage, where we brought-to in 36 fathoms. The ground is not so rocky here as it is in other parts of the road, nor are there so many lost anchors in the ground, which is frequently the occasion of the loss of others."

The mean of the several observations, which were taken in the road, made the latitude of our anchorage to be  $28^{\circ} 27' 33''$ ; and the longitude, by Arnold's large watch, No. 128,  $16^{\circ} 12' 45''$ . The longitude, as found by the Chev. de Borda and M. Varela, is  $16^{\circ} 15' 50''$ , and by Capt. A. T. E. Vidal, in 1844,  $16^{\circ} 17' 14''$ .†

\* "The officers of several ships that have come here for the first time have complained that the directions for the anchorage are extremely unsatisfactory. I think these must have been formed when the buildings of the town did not extend so far North as they do now. I send you a copy of the directions I have drawn up" (as above), "of which some officers, to whom they have been submitted, have expressed their approval.

"I have been much surprised to hear officers talk of this bay as a ticklish place to come to. A most erroneous notion. It is much superior as an anchorage to Madeira.—RICH. BARTLETT, H.B.M. Consul. Santa Cruz, Aug. 12, 1842."—*Naut. Mag.*, 1843, pp. 217 and 551.

† REMARKS OF CAPTAIN LISIANSKY, of the *Neva*.—"The bay of Santa Cruz is not a safe anchoring place, especially in winter; from its being open to the S.E., a quarter from which the wind sometimes blows with great violence. To this may be added, that it has, in many places, a rocky bottom, and abounds so much with lost anchors and warps, that it is necessary to buoy up the cables to prevent their chafing; we found three small casks to each of our cables to be sufficient for the purpose. We removed S.S.E. and N.N.W., having Fort Christoval N.  $81\frac{1}{2}^{\circ}$  W., South Fort S.  $55\frac{1}{2}^{\circ}$  W., and St. Raphael N.  $5^{\circ}$  E.; and the only damage we sustained was the loss of a warp which we could not heave up when we unmoored.

"To come into the bay you must sail close in shore, after passing around the N.E. part of the island; and you should endeavour to get bottom as soon as possible; for which purpose a heavy lead with fifty fathoms of line should be in readiness. The shore here is very high, and so deceiving, that, when I thought myself four leagues from it, I afterwards found, by my run, that I had been mistaken by nearly half that distance.

"During our stay here the peak was so constantly overclouded, that we could see it distinctly only twice. The summit was then (in October) covered with snow; but this is not the case, we were informed, in the months of June and July. The latitude of our anchoring place, according to the different meridian altitudes, appeared to be  $28^{\circ} 26' 36''$  N."

In 1820, or 1821, H.M. Ship *Tartar* anchored in the road of Santa Cruz, in 26 fathoms, dark sand and mud, with the S.W. point of Santa Cruz, S.W.  $\frac{1}{2}$  W., the church in the middle of the town W. by N.  $\frac{1}{4}$  N., and the easternmost battery N. by E.  $\frac{1}{4}$  E. At a mile and a half without the ship, no bottom at 150 fathoms. Stock of all kinds was then plentiful; the bullocks large, weighing from four to seven hundred weight. Ships in want of water can always be supplied, on moderate terms, by the boats belonging to the place.



**OROTAVA, &c.**—The next best port to that of Santa Cruz is the port of *Orotava*, on the western side of the island, and which lies about 8½ leagues to the south-westward of Point Naga. Here the riches and fertility of the island are chiefly to be found, for here the wine is mostly made, and shipped when the weather allows. It is a good harbour in the summer season, or from the beginning of May to the end of October; but, in winter, ships are often obliged to slip their cables, and put to sea, lest they should be surprised by a N.W. wind, which throws in a heavy sea: luckily these winds rarely happen; and, in general, give warning, so that a vessel has time to get away. Straggling rocks project about two ships' length from shore, on which the sea breaks furiously. It is commonly calm in the road, but there is almost always a long northerly swell, that causes ships to roll very much.

The anchorage is in 50 fathoms, about a mile and a half from shore, with the peak bearing S.W.; and it is proper to continue a pilot on board whilst lying here.

**ADVICES** from **TENERIFE**, dated the 11th of November, 1816, stated the great embarrassments foreign ships have to encounter on their arrival at that island, from want of a knowledge of the regulations to be observed. Almost all the British vessels, and particularly the East India ships, which have had occasion to touch at the island for refreshments, have been subject to a heavy expense, and much vexatious delay, by the want of bills of health, and by other omissions. To prevent inconvenience it is necessary to observe the directions for British vessels frequenting the island of Tenerife. The directions are as follow:—

“A bill of health is an indispensable document for a vessel's admission here, from whatever port she may arrive. The quarantine laws are very rigorously enforced, and the want of a bill of health subjects vessels, even from England direct, to a quarantine, that is never removed without the ceremony of repeated health-visits, and payment of heavy fees. Great care must be taken not to get to leeward of the island, as it is a tedious and difficult matter to get up again, the usual and prevalent winds being between N.N.E. and E.N.E. Point Naga should be made, which is the N.E. point of the island, and is very high, and is easily to be known by two large high rocks lying close to it, which appear like ships, and may be seen seven or eight leagues off. You must then run down till you come within two or three leagues; and if bound to Port Orotava, you must steer down along the North shore, (which is very bold, and quite free from danger,) keeping two or three leagues distance; and, after running down eight or nine leagues, if you should not see the Peak, which is often clouded, you will see a large white town (Orotava) on the side of the high land, about a league inland, with two small regular-shaped green hills under it, between which you must steer directly in, and, by doing so, will raise, as it were, another town out of the sea; this is Port Orotava, for which you must steer directly in, until you meet the pratique boat, which will be about two or three miles off; it is a low boat, and comes with the Spanish colours set upon a staff: at any rate, you must not be afraid of running in for the land, as it is very deceiving, and you will be four or five leagues off when you do not think yourself so many miles; and in that case you will not soon get a boat, for they do not come off until you approach very near. The boat, when she comes, brings a pilot, and leaves him on board: you must also bring with you your register, pass, clearances, &c.; and you must take care not to deliver either letters or other papers, (except your bill of health), to any person who may ask for them, without some document, either from your consignee or the consul.

“In running down you must prepare your anchors and cables, and it is customary to bend your small bower cable, with which you will bring up, with only one turn round the windlass, in order that it may run out quick, as the spot where you ride (about half a league off, and to the westward of the town,) is very small; and, if there be many vessels there, it is necessary that your anchor go very quick, as you bring up in from 30 to 40 fathoms of water; but there is little or no tide, and she will bring up easily. You must give her the whole cable round the windlass; your buoy ropes should, therefore, be 45 fathoms long. During the summer months, from April to October, all vessels are moored in an inner harbour, or creek, with iron chains, kept by the merchants for that purpose. Vessels that fall to leeward very often lose much time by mistaking Garachico for Port Orotava, from whence it is distant four and a half leagues West. There is some similarity in the appearance of these places; Garachico having also above it a white town, inland, called *Icod*; but besides, by their situation, Garachico being much nearer Point Teno, the West point of the island, these places are very easily distinguished by the above-mentioned two equally-formed round green hills. Point Naga lies in 28° 36', and the Salvages lie true North from the point, distant about 28 leagues.



"The Grand Salvage is very high, and may be seen ten or twelve leagues off. Your direct course from the Grand Salvage to Port Orotava is S.W. (by compass), and distance 38 leagues; but particular care must be taken not to fall to leeward. The Peak of Tenerife may sometimes be seen forty leagues off, but it is very often hidden by clouds. Should it happen in the winter that you arrive off Port Orotava, during a N.W. or N.N.W. gale, which rarely occurs, but throws in a very heavy sea upon the coast, and would prevent a boat going off to you, it is best to bear away for Santa Cruz, on the S.E. side of the island, after doubling Point Naga.

"Santa Cruz is the preferable place to touch at, for vessels in want of water and refreshments. All vessels, on approaching these ports, ought to hoist their colours, and show their consignee's signal; or, when unconsigned, and only visiting the island, a Union Jack at the fore, and a white flag with a pennant over it at the main, in order that boats may be early sent off to them by their consignees, or by the consul."

**PALMA.**—From the western end of Tenerife to the nearest part of the Island of Palma, the distance is about 15 leagues. The summit of this island is higher than the general level of Tenerife, its peak excepted; hence some navigators run toward it with great confidence in the night.

The chief port is that of Santa Cruz, on the East side of the island. The mark by which a stranger may find it is the following:—When he approaches the East side of the island, Palma will appear shaped exactly like a saddle. Let him steer so as to fall in a little to windward of the lowest place, or middle of the saddle, till he comes within a mile of the land; then, running along shore to the southward, he will perceive the town close by the sea shore, and the shipping lying in the road; but as the land behind the town is high and steep, one cannot discern the shipping till within a mile of them. The road is within a musket-shot of the shore, where vessels commonly ride in 15 or 20 fathoms of water, and are exposed to easterly winds; yet, with good anchors and cables, they may remain with great safety in all winds; for the ground is clean and good, and the great elevation of the island, with the perpendicular height of the land facing the road, repels the wind that blows upon it, though ever so strong.

When there is a great north-east swell at sea, it comes rolling into the bay, but the want of wind, and the deepness of the water, deprive it of strength or power; so that ships, in such a case, ride here with a slack cable. These circumstances render the road of Santa Cruz, in Palma, more secure than any of those of Canaria or Tenerife; but in the winter, the rolling swell, which comes into the bay, breaks high upon the beach, and prevents boats from going off, or landing, for the space of three or four days together.

*Santa Cruz de la Palma* is a large town, but not so good and large as that of Palmas, in Canary, or the towns of Tenerife. Near the mole is a castle, or battery, mounted with a few cannon, for the defence of the shipping, &c. In the middle of the town, near the great church, is a fountain, filled by a rivulet, which plentifully supplies the inhabitants with good water. By the orders of the Spanish government, this is the only town at which refreshments may be given, or communication held with, on the Island of Palma.

*Tassacorta, or Taxacorte*, the port next in consideration to that of Santa Cruz, is on the S.W. part of the island; it is exposed to westerly winds, and little frequented by any vessels excepting boats.

In all the island there is no town of any note, excepting Santa Cruz; but many villages, the chief of which are St. Andrea and Tassacorta. In the north-eastern part, inland, is a remarkable high mountain, called La Caldera, or the Cauldron, being hollow, like the Peak of Tenerife.

**GOMERA.**—The middle of Gomera lies W.S.W. about 5 leagues from Point Teno, of Tenerife. St. SEBASTIAN, the principal town, is situated close by the sea-shore, in the bottom of a bay, on the eastern side, where shipping lie land-locked from all winds, except the S.E. Here you may anchor at a convenient distance from the shore, in from 15 to 7 fathoms; but, as the land-wind frequently blows hard, it is necessary for a ship to moor with a large scope of cable, otherwise she will be in danger of being blown out of the bay. The sea here is generally so smooth, that boats may land on the beach without danger. On the North side of the bay is a cove, where ships of any burthen may haul close to the shore, which is a high perpendicular cliff, and there heave down, clean, or repair. When boats cannot land on the beach, on account of the surf, they put ashore on this cove, from whence there is a pathway along the cliff to the town.

To the best of my remembrance, says Captain Glas, the land that forms the North point

of the bay is the most southerly point of land, on the east side of Gomera, than can be seen from Point Teno, on Tenerife. That land, when one is to the northward of it, at about a league distant, bears a great resemblance to Rame-Head, near Plymouth Sound. In going into the bay, it is necessary to stand close in with this point, for the land-wind is commonly too scanty for a ship to fetch the proper anchoring-place; for that reason it is better to come in with the sea breeze, which generally begins to blow here about noon.

The best place for a ship to lie in here is, where a full view may be had along through the main street of the town, and at about the distance of a cable's length from the beach; it is necessary to moor as soon as possible, because of eddy winds that sometimes blow in the bay.

**FERRO**, or **HIERRO**.—This island, the westernmost of the Canaries, has neither road nor harbour worthy of particular description. It has one church, but the town is inconsiderable. The land rises steeply from the sea, and is craggy on all sides for about a league, so as to render the ascent very difficult. It produces, however, many trees and shrubs, with better grass, herbage, and flowers, than any of the other islands, so that bees and honey abound. The wine is poor, and there are only three fountains or springs of water on the island.

### III.—THE SARGASSO SEA.

By the **SARGASSO SEA** is meant that portion of the ocean distinguished by the weed called *fucus natans*, or floating weed. The name was imparted by the early Portuguese navigators, who called it *Saraçoa* or *Sargasso*, from the form of the seed-pods, or fruit of the plant, which have been called *tropical grapes*.

The *fucus natans*, commonly called *Gulf-weed*, occupies a vast space between the parallels of  $37^{\circ}$  and  $18^{\circ}$  N., and between the meridians of  $30^{\circ}$  and  $43^{\circ}$  W. This space is commonly studded over, like an inundated meadow, with the bushes, which are in some places very abundant, and in others more dispersed. If we could imagine the surface of a wide extended moor, covered with water, the furze and heath bushes would appear something like the clusters of *fucus* scattered over the thickest part of this sea.—*Atl. Mem.* 187.

This weed was met with in large quantities by Colombo; and it is said that the old navigators, *Thevet* and *De Lery*, were fifteen days in passing through extensive fields of it, which they fell in with near the tropic of Cancer.

We cannot, at present, assign with certainty the place of its growth, nor satisfactorily account for its appearance in the situations in which it is found.

That it grows at the bottom of the sea, in situations not yet defined, appears to be a fact; yet the assumption of its growing in the *deep* sea has been pronounced by an intelligent writer, as one quite at variance with the known decrease of temperature at certain depths. It is almost surprising that a regular examination has never yet been made, by which the question might have been determined, although of no consequence in actual practice.

It seems to be generally admitted that a great proportion of the weed is brought from the Mexican Sea. Captain Livingston, in his way from New Orleans to the Strait of Florida, saw large quantities of it; and every one that has navigated the Gulf-stream has remarked the weed in it, or along its borders. Sir Philip Broke and the Baron Alexander de Humboldt say that the stream contains a great deal. Sir Philip says, "We were always surrounded with gulf-weed." Major Rennell adds, "He spoke of that part of the Gulf-stream out in the Atlantic: the others might speak of other parts."

The weed found in the Gulf-stream appears to be supplied from a great bed seen in the Mexican Sea, by Lieutenant Evans, 17th of April, 1828. This bed will be considered, by many of our readers, as the primary bed of the *fucus*, and it is unquestionably one from which the Gulf-stream is occasionally supplied.

The same may be said of the great sponging district upon the Bahama Bank West of the Andros Isles, where vast quantities of gulf-weed are produced, as mentioned in the *Colombian Navigator*, 1848, vol. ii. page 220. And it has also been found on the Campeché Bank, by Capt. Edw. Barnett, R.N., 1847.

For further description and notices of this subject, we refer the reader to the *Atlantic Memoir*, 9th edition, pp. 411 to 415.

## IV.—THE CAPE VERDE ISLANDS.

The CAPE VERDE ISLANDS derive their name from the nearest point of the Coast of Africa, and consist of the Ilha de Sal, or Salt Island; Bonavista; Mayo, or the Isle of May; St. Iago; Fuego, or Fogo; Brava; St. Nicolas; Sta. Lucia; St. Vincent; and St. Antonio; besides several small islets. Of these isles the most considerable is St. Iago, the chief town of which is the seat of government. The population has been estimated at 42,000 persons. Salt is the principal article of commerce.

We have already shown the usual courses and allowances to be made in sailing to these islands; and have there noticed the fogs by which they are frequently surrounded. The estimated limits of the N.E. trade winds, in the vicinity, may be seen in pages 12 and 13.

## POSITIONS OF THE ISLANDS.

	Latitude W.	Longitude N.
Sal. or Salt Island; North Point . . . . .	16° 51' 0"	22° 54' 34"
South Point . . . . .	16 34 0	22 56 4
Bonavista; N.W. Point . . . . .	16 13 20	22 55 44
New Town . . . . .	16 7 0	22 55 34
South Point . . . . .	15 57 0	22 48 44
N.E. Point . . . . .	16 11 0	22 42 34
Leton Rock . . . . .	15 48 0	23 9 4
Mayo; the North Point . . . . .	15 19 30	23 12 4
English Road . . . . .	15 7 30	23 13 4
South Point . . . . .	15 6 40	23 10 4
Island of St. Iago; Bighude or North Point . . . . .	15 19 30	23 45 34
East Point . . . . .	15 0 30	23 25 56
Porto Praya, Quail Island . . . . .	15 53 40	23 30 34
S.W. Point . . . . .	14 58 30	23 44 56
Island of Fogo; North Point . . . . .	15 1 15	24 22 0
Town of Nossa Senhora da Luz . . . . .	14 53 0	24 31 0
Brava; Road on the West side . . . . .	14 48 0	24 43 34
St. Nicolas; East Point . . . . .	16 34 30	24 0 0
North Point . . . . .	16 42 0	24 21 20
West Point . . . . .	16 38 0	24 27 0
South Point . . . . .	16 28 30	24 19 0
Raza; East Point . . . . .	16 38 0	24 38 30
Santa Lucia; East Point . . . . .	16 46 0	24 42 0
North Point . . . . .	16 49 0	24 47 30
St. Vincent; Porto Grande . . . . .	16 54 0	25 1 0
St. Antonio; North Point . . . . .	17 12 0	25 6 45
West Point . . . . .	17 4 0	25 23 10
South Point . . . . .	16 55 0	25 19 25
East Point . . . . .	17 5 30	25 0 5

**ILHA de SAL**, or SALT ISLAND.—The meridian of 23° W., according to the late survey, passes through the middle of it. The northern part of the isle is mountainous; the southern very low and sandy. Both the eastern and western sides are irregular, and the former has an almost continued reef along shore, from North to South.

On approaching the island from the North, it will be found, in general, that the currents are very irregular. You may, on approaching, see the high land at 14 leagues off; sometimes at a greater distance. This land makes in three hillocks, of which the northernmost is the highest. This is the *Peak of Martinez*, in the N.E., the summit of which is 1340 feet above the level of the sea.

The best roadsteads of Sal are on the western side of the island; but there are three little bays on the eastern side, and one on the South. The middle bay on the eastern side, where a ship may lie, is apparently sheltered from the N.E. by a sandy reef stretching out to the eastward, and here salt may be obtained. The other bays on this side are open to the N.E. trade wind, which makes a very heavy sea on the beach.

Great caution is required on approaching the South end of the island in the night, it being so low as hardly to be seen at 10 miles off in the day. Keep your lead going, and



approach no nearer than in 30 fathoms, unless bound into the *South Bay*, which lies between the S.E. and South points of the island.

The S.E. point of Sal is now called *Wreck Point*, H.M. sloop *Erne* having been wrecked near it in 1819: this is surrounded by a reef. From *South Point*, forming the West side of the bay, a dangerous sandy spit extends about one mile into the sea. If coming into the bay, between these points, after rounding *Wreck Point* in 8 or 9 fathoms, bring that point to bear E. by S. and the opposite point W.  $\frac{1}{2}$  N., and anchor in 9 fathoms, sandy bottom. Here you will be sheltered from the N.E. trade, and lie in perfect safety.

At 5 miles to the West, from the *North Point* of Sal, is *Manuel* or the *N.W. Point*. Nearly true South,  $8\frac{1}{2}$  miles from the latter, is a little islet, called *Bird Isle*, near a promontory, *Lion's Head*, which is 620 feet high. At a league to the northward of *Bird Isle* is a small bay, called *Palmyra Bay*, and immediately to the south-eastward of the *Lion's Head*, is *Mordeira Bay*, which is one of the best in the Cape Verde Islands.

MORDEIRA BAY is in a semi-circular shape, one league in extent between its outer point, *Lion's Head* and *Turtle Point*. It is a safe anchorage during the N.E. breezes. Captain Bartholomew says, that it has plenty of fish and turtle, but has no watering-place; nor could that article be procured by sinking casks in the sand.

H.M. ships *Leven* and *Barracouta* anchored in this bay in 1822, and caught a great many most delicious fish: yet the place produces little else than salt and orchilla; a few goats contrive to pick up a scanty subsistence, but eagles abound.

The principal mark for anchoring in *Mordeira Bay* is, *Bird Island* just shut in with the foot of *Lion's Head*, at a mile and a quarter from the bluff land; there are several foul spots; therefore the ground should be examined before the anchor be dropped.

From *Turtle Point*, the *South Point* of *Mordeira Bay*, to the *South Point* of *Sal*, the distance is one league and a half: the ground between is smooth, and has 7 fathoms over it, at half a mile from shore, which is sandy: but be careful, if you anchor, that the ground is clear. In rounding the *South Point*, with the spit extending from it, approach no nearer than in 10 or 8 fathoms, as the latter is steep.

Between *Sal* and *Bonavista* there is, generally, a strong current.

**BONAVISTA.**—The Island of *Bonavista*, properly *Boãvista*, or *Good Sight*, has been so called from the beautiful appearance it made to the first discoverers, in the year 1450. The face of it is variegated: partly low, partly rocky and mountainous; formerly fertile, now more barren. Salt is the principal article of trade, which the inhabitants readily exchange for old clothes, biscuits, meal, and raw silk. The principal place is *ENGLISH ROAD*, on the N.W.

The eastern side of *Bonavista* is partly environed by a reef; and on the N.E. are the reefs on which the *Hartwell*, East-Indiaman, was lost in 1787; and on which the *Resolution*, Capt. Cook, was nearly driven by a southerly current. Half a league, nearly, from the West end is a coral reef, on which the sea breaks; and, at times, the current sets on it very rapidly.

The *Hartwell Reef* is exceedingly dangerous, and many vessels have been lost on it; and which, from the strong current setting to the southward and westward, and carrying ships out of their reckoning, has given rise to many reports of dangers lying at very various distances and directions from the N.E. of *Bonavista*.\*

From the South end of *Sal*, the N.W. Point of *Bonavista* lies true South, or S. by W.  $\frac{1}{4}$  W. by compass, distant seven leagues; and, from the same end of *Sal*, to clear the N.E. reefs, the course, by compass, is S.E. by S. 11 leagues, in order to allow for the

\* A ship, the *Madeline*, bound to New South Wales, was reported to have struck and been wrecked on a reef, at about 8 leagues E.N.E. from *Bonavista*, in April, 1835, as shown in the *Nautical Magazine*, Feb. 1837. Some smart, but justifiable, remarks upon this report have since been given in the *Nautical*, (December, 1839,) the writer of which represents the case as a matter "very nicely cooked up for the edification of seamen," and the benefit of a certain "market." He adds, that Captain Vidal has, by his researches in the *Etna*, satisfactorily proved that no such dangers as the *Madeline* or *Bonetta* Reefs have any existence.

These imaginary dangers have also been sought for by the American exploring squadron, (see *Atlantic Memoir*, pp. 469—471,) and the result seems to be, that the *Madeline* was impelled to the S.W. by the current, and wrecked on the *Hartwell Reef* of *Bonavista*. The tracks of the *Etna* and *Raven*, in search of the two reefs, are shown in a chart prefixed to the *Nautical Magazine* of Dec. 1839, above mentioned: see also the *Naut. Mag.* for 1842, pp. 644, 753, for notices on the situation of the imaginary *Bonetta Rock*.

current that sets to the S.W. on Bonavista: be sure to make this course, and it will bring you to the eastward of these reefs; the easternmost part of which lies in latitude  $16^{\circ} 10'$ .

Bonavista is of an irregular shape, but nearly octagonal, and each way three leagues in extent. Its eastern side is low, but the interior is mountainous, and a ridge of high land from N.W. to S.E. divides the island into two unequal parts. Of this inland chain *Mount Juan Fernandez* is the northern part, and the southern is called the *South Mountain*. Two miles from the N.E. end is another eminence, *Mount Ochel* or *Ochello*: at the N.W. end is the *Peak Reshee*, and in the S.W. is the *Platform Hill*, with an elevation within it, called the *Man Mountain*. *English Road*, on which the town is situate, forms a bay, 5 miles in extent from N.E. to S.W., and its northern part is protected by an islet called by the English, *Small Island*. The South point of this bay is *Coral Point*; and off this point, which is foul, at the distance of half a league, is a coral reef.

Off the N.E. coast, as shown above, are the *Hartwell Reefs*, and three kays, called *Dutch*, *Braithwaite*, and *North*, *Kays*. Between these is sufficient depth of water for ships, in case of necessity, and proper depths for anchorage, under the lee of the reefs; but many rocks are here scattered, with only 12 or 13 feet over them, and four fathoms close along them, on which, with a wind, the sea breaks very high. Of the channels between these reefs the best lies between a ledge, to the E.S.E. of Braithwaite or the *Middle Kay*, which is always visible, and *Dutch* or the *South Kay*. This channel is three-quarters of a mile broad, and has regular soundings, from 15 to 5 fathoms; having been tried by H.M. sloop *Bulldog*, which often sailed in and out of it, and several times anchored under Braithwaite Kay, with that Kay N.E. by E., *Dutch Kay* S.  $\frac{1}{2}$  W. You may moor at half a mile from Braithwaite Kay, in 6 or 7 fathoms, tolerably good ground.

*Braithwaite Kay* is about two miles from the shore. The passage to the north-westward, between this and *North Kay*, is half a mile broad, and its least water is 7 and 8 fathoms. The passage between *Dutch Kay* and Bonavista is narrow, but in the best water are 7 fathoms. *Dutch Kay* bears from Braithwaite Kay S.  $\frac{1}{2}$  W. [*S. by E.*]  $2\frac{1}{4}$  miles.

The *North Kay* is connected to the shore by a reef, having over it only 5 feet of water. When this Kay is in a line with the summit of *Mount Ochel*, or the N.E. high mountain in Bonavista, it bears about W.S.W.  $\frac{1}{2}$  W.

In sailing out to the south-eastward, with the wind easterly, stand well to the southward, taking advantage of the current, here setting easterly, and take care not to borrow too near the back of the reefs.

The *Brazen Hill* and *Point*, (otherwise *Brazen Head*), in latitude  $16^{\circ} 2'$ , on the S.E. coast, is the first high land to the southward of *East-sand Head*, which is the easternmost point of Bonavista. The Head is remarkable, being very bluff and perpendicular on each side. The beach is sandy. The *South Point*, which is nearly 3 leagues more to the south-eastward, is low and foul, and an islet, of the same description, lies at three quarters of a mile to the eastward. To the westward of the point is anchorage, in what is called *Portuguese Road*, with the *Platform Hill* bearing about N.N.W. and nearer inshore, in from 13 and 14 to 8 and 6 fathoms. In the latter depths the landing-place will bear N.E. by N. more than a mile distant.\*

**NORTH AND WEST COASTS.**—From the *North Kay*, off *Mount Ochell*, already described, the coast is foul to *Broyal Point*, on the North coast; and there are several reefs between the latter and the N.W. end of the islands, which are called the *North Point and Reef*. *Small Island*, which forms the N.W. side of the *English Road*, is 4 miles hence to the south-westward.

**ENGLISH ROAD** is a safe anchorage during the summer months, while you have the N.E. breezes, but there are three reefs in it, as shown on the new charts. Vessels generally haul close round *Small Island*, in 6 and 7 fathoms, and pass within the first reef (of 10 feet) in order to avoid the necessity of making a tack to get to the anchorage. The best mark for the latter is, the town open with the N.E. end of *Small Island*, and the highest part of that isle about N. by E. The Ten-foot Reef generally shows itself, but when this is not the case, a stranger will do well to stand outside, rounding it at about  $1\frac{1}{2}$  or 2 miles from *Small Island*, approaching it no nearer than in 6 fathoms, and after once opening the town, taking care not to shut it again.

\* Mr. Finlaison says, that it is requisite to give the point under *Platform Hill* a good berth, as there is a reef extending three miles off. In the day you may see the sea breaking on it. The Mountain E.N.E. clears the danger.

The new town is on the middle of the bay, and the second reef (*New Town Reef*) lies to the westward of it, at a short distance from the beach. The *Inner Reef* lies in like manner, half a league more to the northward. The Ten-feet Reef is about 100 fathoms in length, and extends nearly East and West, at rather more than a quarter of a mile from Small Island.

Mr. Keilor has said, "We experienced, in a calm, a very large sea, breaking in every part of the bay, and were, at the same time, riding with a very short scope of cable, by reason of a strong current setting out of the bay, against the sea: this current runs so high as to frequently break on the deck."

In the rainy season, which is during the months of July, August, and September, the Island of Bonavista is subject to light airs of changeable winds, with heavy swells in the bay and roadsteads.

The tide flows, in English Road, at half-past two, on full and change days, and the sea rises 5 feet. Observe that there is no fresh water for shipping at Bonavista. There is water, but not plenty of it, near the Portuguese Road.

LETON ROCK, or JOHN LETON'S ROCK, a dangerous reef, lies in lat.  $15^{\circ} 48'$ , long.  $23^{\circ} 13'$ . This shoal has heretofore been variously represented, and described as just even with the surface of the sea, which breaks upon it with great violence. The bottom about it is rocky, and swarms with fish. Its extent from North to South is about a mile.

From the centre of the reef the North Point of Bonavista bears N.E.  $\frac{1}{2}$  N. [ $N. 26^{\circ} E.$ ]  $9\frac{1}{2}$  leagues, and the South of the same E. by N. [ $N. 64^{\circ} E.$ ] 7 leagues.

The lamentable wreck of the *Lady Burgess*, East India ship, one of the outward bound fleet of 1806, was caused by striking on the Leton Rock. This ship struck among the breakers on the rock, at two in the morning of the 19th of April, 1806. The *Alexander*, *Sovereign*, *Lord Nelson*, and other ships, narrowly escaped. The *Lord Melville* struck three times, and slipped off the rock into 25 fathoms, at the time the *Lady Burgess* was standing directly among the breakers. It appeared, from the observations subsequently made, that the Leton Reef is composed of coral; no part above water. Captain Swinton conjectured that the extent on which a ship would strike is not above a cable's length, and that there are no breakers on it in fine weather. To the northward it appeared to be steep-to.

This danger appears to be on the central part of an extensive bank of coral soundings, extending 4 or 5 miles to the southward, and considerably to the eastward and westward. At daylight, the ship *Asia* was in 52 fathoms, coral bottom, when the breakers and wreck bore E. by N. about 4 miles distant. Other ships had soundings of 25 to 50 fathoms to the West and S.W. of the reef, at from 2 to 5 miles from the breakers. Immediately after striking, the *Lord Melville* had 25 fathoms, its head being to eastward; shortly after, 30 fathoms. This ship hove-to, with her head easterly until daylight, and had from 30 to 40 fathoms, all coral soundings. Others had soundings 10 or 12 miles to the southward of the reef, generally coral, sometimes intermixed with sand and shells, and not less than 20 fathoms. Its situation, according to the late survey, is that given above.

**ISLE OF MAYO.**—This island is raised considerably above the sea, but a great part is level, excepting three inland mountains, of considerable height: but these show as hummocks, and are not conspicuous. On the S.W. side is a sandy bay, called ENGLISH ROAD, within which is the town and extensive salt-pans. The soil of this isle is generally dry and unproductive, and there is but one spring of water in the island. The coast is, however, plentifully stocked with fish, which supply, with a few vegetable productions, subsistence to the poor inhabitants.

From the S.W. end of Bonavista to the island of Mayo, the course is S.W. by S., distant 15 leagues; Mayo is about 4 leagues in length from North to South, rising most toward the middle. On approaching the island from the S.E. the appearance is very different; you may descry, in the North part, two hummocks, which appear like two islands; but, when nearer, the land is perceived, by which they are connected. Southward of these is a mountain, (*Monte Mayo*), with very low ground to the South, over which two hillocks are seen.

At half a league from the middle of the North side of the island is a reef extending N.N.E. and S.S.W. three-quarters of a mile, which must be cautiously avoided.

In *English Road* ships may anchor in 7 or 8 fathoms of water. The landing is very indifferent; no good water to be had; and the place is quite defenceless. The shore to



the eastward of and abreast the town is steep, bluff, and rocky; but to the westward, a low white sandy beach extends to a rounding point from which a spit of sand and coral stretches outward, at a short distance from the extremity of which there is no ground at 45 fathoms. The spit may be rounded in about 16 fathoms, and a ship should not anchor farther out than in that depth, the edge of the bank being steep. At half a mile West from the town there is anchorage in 12 fathoms, lat. according to *particular plan*,  $15^{\circ} 6' 10''$ , long.  $23^{\circ} 15'$ . Variation on shore  $15^{\circ} 16' W.$  1819.\* Captain Fitzroy found it to be  $16^{\circ} W.$  in 1832.

**ST. IAGO.**—Ships running from Bonavista to St. Iago, and being obliged to ply to windward during the night, must be cautious how they approach Mayo, on account of the reef before mentioned, off the North point of that island. Having doubled that point they may steer S.W. to make the land of St. Iago, and thence southward until they make the Road of Praya, the common place of anchorage.

The land of St. Iago is very high, and the eastern coast is bordered with rocks, lying very near the land, along which you may sail very safely, at the distance of two miles. The S.E. part appears as a long, low point, when you are to the northward or southward of it; and, from this point S.W. by *S. true*, about 6 miles, lies the East point of Porto Praya. Between the two, and near the former, lies a bay, which so much resembles that of Port Praya, that many vessels, deceived by the likeness, have run the hazard of being lost in this dangerous place: at the bottom of it are several cocoa-nut trees, and a few houses; the land between this and the point of Port Praya is mostly perpendicular, appearing, in some places, like the *Berry Head* in Torbay; and though the Fort of Port Praya, which stands on a small cliff, is a mark by which the true bay may be distinguished from the false one, yet the surest mark is, that the North or East point of the false bay is surrounded with breakers; whereas the Point of Port Praya is high, steep, and free from shoals: you must haul close round the point, and keep within a cable's length of the shore to go to the anchoring place. It may also be noticed, that there is now a naval signal-post on the cliff, at half a league to the northward of the entrance of Port Praya.

PORT PRAYA is a fine bay, which lies between two points, bearing from each other W. by S. and E. by N. true, about  $1\frac{1}{2}$  mile. As you sail round the East point you will soon open the forts at the bottom of the bay, to the westward of which, in a valley, are several cocoa nut trees and a small house.

The winds, except in the tornado season, are generally in the N.E. quarter, and frequently blow fresh and squally; there are also frequent puffs from over the high land; therefore, as you haul into the bay, it is necessary to have the top-gallant-sails furled, and to take one reef or more in the topsails. The cliffs, from the East part of the fort, are those above described: you may easily sail within a cable's length of the East land, where you will have 7 or 8 fathoms of water, and, in many places, see the ground at that depth.

On the western side of the bay lies a small black island, called the *Isle of Quails*, or *Frenchman's Island*; it is almost even to the top; but rugged at each end, and some rocks lie off each end to about half a cable's length: there is also a rocky ledge off the North end, where the water is, in general, shallow: you will not have more than 3 fathoms of water between this and the fort; inside, or to the westward of the island, it is navigable for boats only.†

\* For Captain Mudge's Remarks on the Magnetic Influence of Mayo, see '*Atlantic Memoir*,' 8th edition, Note 2, p. 38.

† ST. IAGO was visited by H.M. ship *Bustard*, in 1825, when the following remarks were written by the master, Mr. Edw. Dunsterville:—"This island, bearing W.N.W.  $\frac{1}{2}$  W., 8 leagues, appears very high. *Mount St. Antonio*, rising out of its centre, is of a conical form, and terminates in a peak, which peak, bearing N.N.W. (by compass), leads to Port Praya Road; and as you advance westward, you will see the East end, which is very low. As a farther guide, you will see an opening, several miles north-eastward of the harbour, on *Signal Post Hill*, which gradually slopes to the westward: also *Red Hill*, which is on the larboard side of the bay, N. by W.

"The town is situate on an eminence rather high, and perfectly white; the houses being visible from S. by E. to S. W. by W.

"In sailing into the bay, keep well to the eastward, as the ground to the westward is foul. Anchor in from 10 to 7 fathoms, with the Red Hill W. by N., Outer Eastern Entrance, E.S.E. Latitude of the anchorage,  $14^{\circ} 53' 10''$ .

"A heavy swell sets into the bay, and the prevailing winds are from N.E. to East. On the 22nd of October the weather was sultry, with heavy rains. Fruit, cattle, and water, may be obtained here. The two latter not very good. The watering place is at the back of the town, and at some distance

*Captain Grant*, in the relation of his voyage to New South Wales,\* has stated, that after rounding the S.E. point of St. Iago, there is a small bay to the East, about 4 miles, called by the inhabitants after St. Francis. This bay, he says, may be always known, by its having at the back of it, and nearly close down to the water's edge, a high, flat-topped table land, standing between two mountains, which cannot be mistaken. Port Praya has, at the bottom of it, beside the house already mentioned, a long, low valley, running inland to a considerable extent, the mountains behind which are sharp and peaked. Near the landing-place there are two remarkable forts on the East side, which you must open before you come to anchor; and, on the West side, is Quail's Island, which is readily seen as you enter. But the surest mark is that from the S.E. end of the island of St. Iago the shore is low and rocky in general, until you reach the bay of St. Francis: thence to Port Praya the shore is of high clayey cliffs, which round into the harbour, forming the East side of it.

For sailing into Port Praya Bay, you may borrow on the eastern point (*Ponta das Bicudas*), to 7 or 8 fathoms of water, and thence proceed north-westward to the anchorage. It is to be noticed that the ground is foul in different parts, particularly on the western side.

The best anchorage is, to bring the flag-staff on the fort N.W. by N. [*N.W.*] about three-quarters of a mile, the body of Quail's Island West, and the point of the bay opposite Quail's Island, E. by S. in 7 and 8 fathoms. Many commanders prefer anchoring nearer the north-east side of the bay than the Isle of Quails, for the sake of more easily getting under sail, without running the risk of being carried by the currents upon the points of rocks to leeward, before the vessel has gained fresh way enough to steer clear of them; and it has been observed, that vessels may anchor anywhere in the bay, from 9 to 11 fathoms, good bottom, but nearer to the eastern shore than to the Isle of Quails; as the wind, except in the months of August, September, and October, generally blows from the N.E.

H.M. ship *Tartar*, Sir George Collier, anchored with the best bower in 11 fathoms, nearly in a line with, or a little within, the two outer points, ground of sand and bits of coral. Quail Island then bore N.W., the flag-staff of the fort N.N.W., and East point of the bay E.  $\frac{1}{2}$  S. A salute of thirteen guns was returned. Stock of all kinds was in great plenty.

"The Bay of Praya being under the South end of St. Iago, should you be to the leeward of it, you will find it difficult in beating to windward against so strong a current as there is here. In the months of July, August, and September, the rains are frequent, and the southerly winds, which then prevail, cause a great sea in the bay, with a great surf on shore. The inhabitants, in these months, are subject to dangerous fevers."

To the foregoing observations, the following, by an officer of the *Argo*, 1802, may, with propriety, be added:—There are two wells from which water is obtained; the farthest, on the West of the town, is the best, and the water good. The casks must be rolled up to the well and back again, which is the most tedious part of the business. The water is drawn from the well by buckets, sent on shore for that purpose, and a tail-block, made fast to a branch of a tree, which hangs over the well. The boats will sail on and off shore.

A spirited individual has, however, at considerable expense, conducted the water to the beach at this place, so that it can be filled with great facility, and be obtained in a good state for ships' use. Formerly it was, as above mentioned, a service of much difficulty and toil to water a vessel at Port Praya, as the casks had to be rolled up to the well, not the cleanest in the world, and the water had to be baled up in buckets. The *Vindictive*, of 50 guns, in April, 1842, obtained sixty tons, and she was only in the anchorage forty-eight hours. Merchant vessels are supplied, by rafting, by the boatmen, who charge 3d. for a large cask. The cost of the water is about 320 reis the hogshead.

The sandy cove, on the East side of the bay, is an excellent place to haul the sear or seine in; as is, also, the head of the bay. The principal fish are the mullet, grey and red, rock-fish, snappers, cavalla, and a variety of small fish.

The governor-general of the Cape Verde Islands resided, formerly, at St. Iago, an epis-

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from the beach. Small casks are the most convenient in foul weather; but otherwise you raft the casks off from the ship to the beach.

"Quail Island, though centrally situated, is too near the mainland to assist any one in finding the anchorage. Do not approach it, on any point, nearer than half a mile, as the vicinity is rocky, and some rocks do not appear above the surface. Saluted the Governor with thirteen guns, which were returned with an equal number, and every officer was treated with respect."

\* Published by Mr. Egerton, London, 4to, 1803.

copal city, and the capital of the island; but foreign ships having totally abandoned the round of St. Iago, which is very bad, and of difficult access, to come to that of Praya, the governor now resides at this bay during the dry season.

To those bound from Praya Bay to Bonavista Mr. Keilor recommends that they should endeavour to sail in the evening, as the current will be favourable. He adds, do not stand too far over toward the African shore, nor work between Mayo and St. Iago, and you will find the ship get to the eastward very fast.

**FUEGO**, or FOGO.—This island, much higher than any other of the Cape Verde Islands, is only a continued mountain, rising into a peak of great height, which burns continually. The height of this peak is  $1,626\frac{1}{2}$  fathoms above the level of the sea. This island has, nevertheless, some inhabitants, whom the eruptions of the volcano force sometimes to quit the island. The ground is clear within a mile of the shore, on the N.W., West, and South parts; but on the S.E., East, and N.E. parts it is rocky. At about 4 miles from the North end of Fogo lies a rock, with 12 or 14 feet of water on it, over which the sea breaks when it blows hard, but not else, and the sea is clean all round it.\*

The town is that of *Nossa Senhora da Luz*, or *Luz*, on the western side. The roadstead is open, and the anchoring ground off the town very close in, being only half a mile from the shore. In 25 fathoms, rocky bottom, the northern extremity bears N.  $20^{\circ}$  E. [N.  $4^{\circ}$  W.]; the southern extremity, S.  $68^{\circ}$  E.; the northern flagstaff, N.  $85^{\circ}$  E.; the southern, N.  $21^{\circ}$  E.

No other soundings are to be obtained near either Fogo or Brava with a line of 130 fathoms, at three-quarters of a mile from shore.

The marks, says Mr. Keilor, when a brig was at anchor off the town, in 10 fathoms of water, were, the town bearing E. by N., a quarter of a mile; the Mount, E.N.E.; the South end of Brava, S.E. by S. The bay is open, with foul ground, and a bad landing for boats. Corn, fruit, and cattle may be purchased at Fogo, but water is scarce.

**BRAVA**.—Brava is very high, and might be seen at a great distance, were it not constantly covered by a dense atmosphere. Its climate is temperate and healthy. The winds here prevail at N.E. or East most part of the year, excepting in July, August, and September. The channel between Fogo and Brava is nine leagues in breadth. Five miles to the N.N.E. of Brava are the *Rombos*, or *Romes*, two small rocky isles, nearly connected by smaller rocks, forming a crescent. The westernmost isle is lofty, and has a peak on it. Between these islets and the North end of Brava is a clear passage. Brava has heretofore had plenty of corn, live stock, and fruit; but bad landing for boats, except in the harbour on the N.E.

Although Brava is very high, its mountains rising one above the other, like pyramids, yet, being so near the isle of Fogo, it seems, in comparison, to be but low. It produces plenty of salt, and abounds most with saltpetre of any of the islands. According to Captain Roberts it has several bays or roads, where a ship may anchor, the best of which, called *Furna*, or the *Oven*, lies toward the north-east end of the island; if you haul in near the rock, which is a very good kay, having water enough by the side for a first rate man-of-war, you will lie land-locked from all winds; nor does any wind blow in there, except from the S. by E. to the S.W., which heaves a sea into the bay, and makes it very well deserve the name of a harbour.

The natives of Brava are all blacks, and very few; you will find them the most harmless, hospitable, and generous, of all the islanders.

**St. NICOLAS**.—At this island vessels of different nations have occasionally touched for refreshments; which were sold at moderate prices. The land is high, and the coasts, therefore, subject to heavy squalls, &c.

There are two remarkable mountains, which may be seen from a distance of 15 leagues; one in the shape of a sugar-loaf, called the *Peak of Trade*, which is near the middle of the island, the other, *Monte Gordo*, near the West end.

From English Road, in Bonavista, to the East Point of St. Nicolas, the true bearing is W.N.W., and the distance 22 leagues: the course must be regulated according to the set of the sea. The East end of the island may be known by its being a platform point, having a pyramidal rock, which appears like a sail, at a short distance.

On the South side, at a league and a half from this end of the island, is a bay, having a black sandy beach and a pond of fresh water, supplied from the mountains, and hence called, by the English, *Freshwater Bay*. To anchor in this bay shut all the land to the

\* Not inserted in the Admiralty chart; its existence is, therefore, questionable.



eastward within the East point of the bay; you will then lie in 7 fathoms of water, within half a mile from the shore. There is good landing for the boats, with plenty of good water in fine weather, and at neap tides; for, as the tides rise here 5 or 6 feet on the new and full moon, the pond is then overflowed. At this time you are subject to heavy squalls; and, notwithstanding the wind blows off shore, the sea is very high close to the beach.

At about 4 leagues to the westward from the middle of Freshwater Bay lies *St. George's Bay*, where a ship can get refreshments; but there is no water. This bay is known by a sugar-loaf mount, and a flagstaff on the hill above the bay: there is tolerable good anchoring in 7 fathoms, close to the shore; but, without that depth, or in 9 or 10 fathoms, the ground is rocky. There is a shelf stretching S.E. by S. from the N.E. point of the bay, on which less water is found than within it; so that, should your anchor start, which will happen if you are not careful, the bank being very steep, and the squalls very sudden, it may hook this shelf and be lost. The marks to anchor are, the cove, or landing place for boats, N.W., distant a quarter of a mile; Sugar-loaf Mount N.E. by E., and the flagstaff N.W. by N.

On the S.W. side of *St. Nicolas* is *Terrafal Bay*, where you may anchor in from 20 to 10 fathoms, with the coast to the southward bearing S. by E., and the islands Raza and Branco in a line bearing N.W. by W.  $\frac{1}{4}$  W. [W.N.W.  $\frac{1}{2}$  W.], and the landing place E.  $\frac{1}{2}$  N. a quarter of a mile.

The customhouse is situate on the S.E. angle or corner of this bay. From this to the West point of *St. Nicolas* there is a bank of soundings, with from 40 to 20 and 35 fathoms at half a mile from shore. In the last depth is anchorage, in sandy ground, at a mile S. by W. from the West point, but sheltered only from the N.E.

There is, in *Terrafal Bay*, a high bluff rocky point, near a quarter of a mile short of the sea side; in which place it is low, stony, gravelly, and, in some places, shingly ground; the shore being a pebbly beach. On each side of this point is a very deep gully, out of which come violent flaws or gusts of wind; and, therefore, when anything of a hard gale blows, it is very difficult to turn up into this bay. To avoid these flaws you must anchor right against the point, between the gullies, where you may ride very easy under its lee, in from 16 to 3 fathoms.

Within this Bay the depths are 12, 13, and 14 fathoms, soft ground; and then they shoalen gradually to the shore, to the depths of 4 or 5 fathoms, where you have again sand to the pebbly beach.

By digging a well, almost anywhere on the low land, you may water here, unless the rainy season has failed; but there is always water in the valley, about half a mile from the sea, whence the natives will bring it down on asses for a trifle. From this road you may see, in clear weather, all the leeward islands; but if it be in the least hazy, the Isle Raza is not discernible.

**RAZA, BRANCO, and ST. LUCIA.**—These islands lie between those of *St. Nicholas* and *St. Vincent*, as shown on the charts. *RAZA* lies true West 8 miles from the West Point of *St. Nicholas*, and appears in the old charts under the name of *Chaon* or *Dog's Isle*. It is nearly two miles long, from East to West, and  $1\frac{1}{2}$  broad. The landing place is under the N.W. point facing the West. This island is low and uninhabited. The edge of its coast is steep and rocky, and landing is difficult when there is any wind. Between it and *Branco*, at about one-third from *Raza*, is a coral reef, extending S.S.W. and N.N.E., and having on its shallow part 6 fathoms of water, but deepening gradually on the West to 15, and on the East to 18 and 20 fathoms. The sea continually breaks over the reef, owing to a strong tide or current setting through between the isles.

*BRANCO*, the *Redonda* of the old charts, is a league to the N.W. of *Raza*, and much higher. In the passage between are soundings of 6 to 18 in the middle, and decreasing, near *Branco*, to 7 fathoms. The latter is a narrow island,  $2\frac{1}{2}$  miles long from S.E. to N.W. A long spit of sand stretches from its S.E. end, on which the rollers or break is violent, and its shore is altogether rocky.

*Monte Gordo*, or the Broad Mountain, is in the central part of the island, toward the West. Its summit is 4,200 feet above the level of the sea. The mountain is composed entirely of volcanic matter, very fragile and porous, and does not form a peak like many of the smaller ones on the island. It is well clothed with vegetation, even to the summit. The *Euphorbium balsamifera* flourishes to about 3,700 feet above the level of the sea. The

prospect hence is very extensive, calm, and beautiful. *Mr. Forbes; Captain Owen*, Vol. i. p. 27.

ST. LUCIA lies at the distance of  $3\frac{1}{2}$  miles to the northward of Branco, and the bank of soundings extends to this island. The bank here forms a regular flat of 10 to 13 fathoms. The South coast trends nearly East and West 4 miles, and in the middle of it is a good landing place. A steep bank, half a mile broad, stretches from it, having on its edge 2 to 4 fathoms. The N.W. part of St. Lucia rises into high mountains.

*Captain Bartholomew* describes St. Lucia as of moderate height, with a bay on the S.W., where small vessels may anchor; being sheltered from all points but South and S.E. The beach is sandy; the anchorage, small pebbles and sand. In the middle of the bay is an islet, named *Leon*, with the ruins of a village on it, and frequented by fishermen only. There are many turtle here, and much orchilla is gathered, with some cotton, in a wild state.

These islets are occasionally visited by parties from the other islands, for the purpose of hunting wild bullocks and goats.

**ST. VINCENT'S.**—The island of St. Vincent is separated by a clear channel, 4 miles broad, from that of St. Lucia, and by one of 7 miles from that of St. Antonio. This island is 11 miles long, from East to West, and about 6 broad. The general height of the mountains is 2,500 feet, but by barometrical observation, the loftiest point is 2,410 feet above the sea.

I observed cultivated ground on a table land, at the height of 2,400 feet; it produced beans and pumpkins, the former introduced from the West Indies. The only tree growing at this height is the euphorbia, but at the loftiest part is vegetation.

The water runs from the elevated parts to the sea coast, and loses itself in the sand, but the quantity of it is not capable to form a river in the dry season. The principal valley is divided by a hill, which connects the northern and southern division. The watercourse, running West, takes its rise 520 feet above the level of the sea; the bed is gravel, covered with mud, connected with chalk. The coast forms a great number of little bays, in general capable of containing vessels; the chief port is named Porto Grande, situated on the West side of the island, and is a good anchorage for about 300 vessels. Water and provisions cannot be easily procured: the former defect might be remedied. The wind blows generally from the north-east; in the rainy season the south-east wind prevails, which commences in July, and ends on the 15th of October. During the last years the rains have been regular in point of time, but sometimes not in quantity.

Those of the inhabitants belonging to the negro race have, from their intercourse with Europeans, lost much of their original character; they live generally to a great age, for, amongst a population of about 560, some have attained the age of more than 100 years. They are a very industrious race, as far as regards the means of obtaining subsistence. They are in general handsome, and obliging in manner. The inhabitants are subject to the Portuguese, whose language predominates; there is not the least trace of the native language of the island. The only articles of traffic exported from this island are skins, fruits, and fish. The chief articles of food are vegetables, beans, and Indian corn, grown in the island; bananas are brought from St. Antonio; fish caught on the shores. Tobacco and clothes appeared to be the most acceptable.\*

PORTO GRANDE is the largest and best bay in the Cape Verde Islands: it is capable of holding 300 sail of large ships, well sheltered under the high lands, and has a fine appearance. *Lieuts.* (since *Captains*) *Vidal* and *Mudge*, who surveyed this place in 1820, say of it, that it forms a good and safe anchorage, where you may strip and refit your ship; as it is sheltered both from wind and sea. The wind generally blows from the N.E. over a part of the land, and seaward it is protected by the island of St. Antonio.

Wood is plentiful, and water may be obtained from the well on the eastern shore, but it is not good, and is scarce in the dry season. After a refit here a complete supply of the latter may be found in the Bay of Terrafal, St. Antonio, which is 23 miles to the westward, and reckoned the best watering place among the Cape Verde Islands. Cattle may be had at Porto Grande, but they are not good. The church and customhouse are situate in the bottom of the bay on the East, and a signal post may be seen, erected upon a hill, at a

\* Description, by Mr. Roscher, mineralogist to the Niger Expedition, 1841. See *Naut. Mag.*, 1841, p. 734.

short distance from the anchorage, which gives notice of whatever may be passing or approaching the island.\*

Latitude of the customhouse,  $16^{\circ} 53' 33''$ , long.  $25^{\circ} 3' 19''$ . Variation,  $17^{\circ} 46'$ , 1820. In 1841,  $17^{\circ} 17' W.$ , dip,  $49^{\circ} 10'$ .

Without the entrance of the bay, at nearly three-quarters of a mile from its N.W. point, is a remarkable steep islet, called *Bird Isle*, which, at a distance, appears round like a sugar loaf. Mr. Finlaison says, you may run in on either side of it, and will find regular soundings thence to the shore; depths from 30 to 10, 8, 6, 4, and 2 fathoms, to the beach. The ground is good in most parts of the bay, and you may anchor anywhere in 7 or 6 fathoms of water, sandy bottom, with coral branches. The water is very clear, so that you may pick out a clear spot for the anchor.

"Ships should moor with a kedge, as a very strong current commonly sets to the N.E. between Bird Island and the shore: and, as the N.E. wind is variable, at night it is impossible to keep a clear anchor, without this precaution; for the wind, at times, comes in strong gusts from off the land."†

Mr. Finlaison adds, "In running between St. Antonio and St. Vincent we sounded in 42 fathoms, bits of coral mixed with sand and small stones. Within half a mile of Bird Island we had 42 fathoms.

"Having proceeded about 8 miles to the southward of St. Vincent's, 40 fathoms of water were found; and, on approaching *Still Bay*, at the S.W. side of the island, found regular soundings, oaze and sand, to 20 fathoms, nearly in the centre of that bay. We anchored in this depth, with the West Point of the Bay W. by N., and its East Point E.S.E. The distance between the two points is  $2\frac{1}{2}$  miles; regular soundings from the ship to the shore, and very good landing on the beach. The ground is perfectly clear of rocks, but the bay is open to the S.W. wind. Water is also to be got by digging for."

Captain Bartholomew describes the bay on the S.W. side as the *Bay of St. Pedro*, having a fine sandy beach, and he says that vessels may anchor in 10 fathoms, near the middle of the bay, or rather more to the westward. The anchorage is good in the dry season, and the inhabitants say there is plenty of wood and water. The American whalers frequent this place.

On the eastern side of the island is another anchorage, the *Praya da Gatta*, with a sandy beach, near which vessels may anchor in 6 fathoms; the bottom is clear, but a sea sets directly in when the wind is either N.E. or S.E., the island of Sta. Lucia sheltering between these points. This bay and coast are without wood, water, and inhabitants.

**ST. ANTONIO.**—This island, as already shown, lies at the distance of 8 miles to the N.W. of St. Vincent, and it appears, altogether, like an assemblage of high mountains, particularly to the West. It is 22 miles in length, from East to West, and about 11 in breadth, and its highest peak is estimated at 9,700 feet above the level of the sea.

Of the two highest mountains in the West the *Sugarloaf* is the most elevated, and both are commonly covered with clouds. According to the late survey the Sugarloaf stands in  $17^{\circ} 4' N.$  and  $25^{\circ} 2\frac{1}{2}' W.$  The island is very woody, but has plenty of goats, fruits, and

\* March 30, 1822.—"On the *Leven's* arrival in Porto Grande we sent on shore to a few houses, called a town, at the bottom of the bay, to inform the governor who we were and what were our wishes. We could find only one miserable Portuguese, the rest being all negroes; but most of them appeared to be free. The whole population did not exceed 100, without any plantations near their houses, as the soil is so very dry and sterile; but, on the sides of the mountains, in parts where there is water, they are said to have some good gardens. Indigo grows everywhere wild; and with it they dye the coarse cloths which they manufacture from cotton, which, if ever planted by them, appears to be left entirely to nature's cultivation and care.

"We pitched a tent upon the beach; cleaned a well in a ravine, which, during the rainy season, is a watercourse; then landed the women and a party to wash. During our stay the sea breeze every day blew furiously over the hills to the N.E. of our anchorage; and, although the whole bay is nearly landlocked, yet the surf is very high all round, except in one spot near the town. We therefore embarked only a tun and a half of bad water, and caught a few fish."—*Capt. W. F. Owen*, vol. i. p. 28.

† In working between St. Antonio and St. Vincent, to Porto Grande, you may stand to a mile off St. Antonio, and as near as you please to St. Vincent, as the current generally sets strongly through to the N.E.—*R. Keilor*.

Mr. Finlaison says, that ships bound through this channel should keep over toward the latter, as no danger whatever is to be apprehended on that side.



salt; it produces wine, cotton, indigo, &c. There is a village, *Santa Cruz*, on its S.E. side, but the ground is not fit for anchorage.

*Terra-fal Bay*, which is only half a league to the northward of the S.W. end of the island, has been already noticed (page 42), as the best watering place in the Cape Verde Islands, and other refreshments may here be purchased. The edge of the bank, with 40 fathoms, is about one-third of a mile from shore. At a cable's length within are 30 fathoms, and it thence shoalens inward to 20, 8, and 4 fathoms: the latter near the beach. Latitude of the landing and watering place,  $16^{\circ} 57'$ ; long.  $25^{\circ} 24' 48''$ . Variation, in 1820,  $16^{\circ}$  W.

"This watering place of Terra-fal Bay is one of the most convenient for the purpose amongst the Cape Verde Islands. The bay is spacious, and has a black sandy bottom. Vessels anchor in 20 fathoms, at three-quarters of a cable's length from the shore, sheltered from the N.E. and South winds and sea: and, when the wind comes to the westward of South or North, there is always, from the extreme high land, a calm in the bay, the wind never blowing home, but only occasioning a swell to set in.

"In going out of the bay the wind was light, and we warped out by sending a stream anchor ahead, with two hawsers on end, where it was thrown overboard, the boat having had a depth of 35 fathoms the instant before; but it appeared to have fallen over a precipitous cliff, similar to that which lined the beach half a mile within it; for the anchor would have carried out cable, seemingly, as long as we would have veered it, and the boat could get no soundings with 60 fathoms: the consequence was, that the hawser was cut through, at 30 or 40 from the anchor, and lost."

Captain Monteath says, "*On approaching St. Antonio*, which is very high, and may be discerned in clear weather at a great distance, it appears black, rocky, and barren; consisting of immense rocks or mountains, heaped on each other, and rising far above the clouds, which, in general, cover a great portion of their summits. On the N.E. part of the island the mountains are divided by deep ravines and gullies, which have every appearance of deep water having passed down them: on rounding the N.E. point you will perceive, to the S.W., large white patches from near the shore, until about halfway up the mountains; at this distance they are not unlike ripe fields of corn; but, on nearing them, they are found to consist only of large white rocks, like pumice, and are entirely destitute of verdure; the mountains toward the centre of the island are composed of rocks of stratified basalt, in thick and perpendicular columns, to their very summits: it also rises more gently, for a considerable elevation, than either the N.E. or N.W. ends, but without verdure, excepting a few tufts of brushwood near the shore, and patches of brown heath, with which the island is generally covered. From the N.E. point, until rounding the point of Sta. Cruz, the only habitations I could discern were two or three miserable looking huts built upon the shore, about a mile distant from each other.

"After rounding the point, on which the town of Sta. Cruz is laid down on the charts, I kept a good lookout, expecting the fort or town to open to view; but was surprised at not seeing any appearance of either. However, after a minute search with the spyglass, I did observe a few negro huts among a quantity of brushwood, in a small valley near the shore, and in which there appeared to be a little verdure; this was, in fact, the only place which I observed green in any part of the South side of this miserable island; and this, I suppose, must be the town of Sta. Cruz.

"The S.W. point is pretty well covered with brushwood, but I saw no signs of cultivation nor inhabitants. The channel between this island and St. Vincent's is quite clear of danger, and within a short distance of the shore on each side (except off the point of Sta. Cruz, where the breakers run out about a mile) is bold-to, and I should apprehend that a vessel might work through this passage with little risk, either by day or night."

## V.—SHOALS, &c., BETWEEN THE CAPE VERDE ISLES AND THE N.E. COAST OF BRASIL.

These shoals, &c., described more fully in the Memoir on the Atlantic Ocean and the Directory for the Ethiopic Ocean, are as follow:—

The *VIGIA OF FIVE PALMAS*, in latitude  $12^{\circ}$  N., longitude  $17^{\circ} 20'$  W., described also as *Hinmun's Shoal*. Position and even existence very doubtful.

HANNAH'S CORAL SHOAL, lat.  $10^{\circ} 7'$ , long.  $27^{\circ} 32'$ .—This shoal was discovered by Captain Thomas Fanning, of the brig *Hannah*, on the passage from Rio Janeiro to Trieste, June 25, 1824. It appeared to extend 150 fathoms N.E. and S.W., with two branches or arms from it on the N.W. side, and one on the S.E. side. Sounded in 15 fathoms, granulated coral, on the S.W. part, but supposed it much shoaler on the N.E. points, as the weed was plainly to be seen from the masthead, on the surface of the water. Its latitude was found to be  $10^{\circ} 7' N.$ , and longitude about  $27^{\circ} 32' W.$  The latter was deduced from lunar observations taken the day before; but as a strong westerly current [the Equatorial] was experienced, it cannot be depended on within 20 miles. The latitude may be considered correct.

MARIA AND BONETTA ROCKS, MADELINE REEF, WARLEY'S SHOAL, FRENCH SHOAL, ST. ANNE'S SHOAL, BOM FELIX SHOAL, PATTY'S OVERFALLS, TRITON SHOAL, CÆSAR BREAKERS, BOUVET'S BANK, &c.?—In our Atlantic Memoir, 9th edit., pp. 469—472, we have given extracts from a letter, addressed to the Secretary of the United States' Navy, by Captain Charles Wilkes, commanding the South Sea surveying and exploring expedition, and dated on board the sloop *Vincennes*, at Rio Janeiro, Nov. 27, 1838, in which it will be seen that the squadron effected the examination of the supposed position of ten or eleven shoals or dangers, the detailed accounts of which were formerly given in this work, their assigned positions in the charts and the non-existence of which has apparently been proved.

To the imaginary shoals above mentioned we may doubtless add, the *Cæsar Breakers*, said to have been seen in latitude  $2^{\circ} N.$  and longitude  $22^{\circ} 18'$ , in 1730; *Dubreuil's Vigia*, lat.  $14^{\circ} 50'$ , long.  $29^{\circ} 40'$ ; *Baro das Garcias*, lat.  $13^{\circ} 0'$ , long.  $29^{\circ} 50'$ ; *Vigia de 5 Palmas*, lat.  $12^{\circ} 0'$ , long.  $27^{\circ} 20'$ ; *Longchamps Rock*, lat.  $9^{\circ} 47'$ , long.  $30^{\circ}$ ; and the *Maalstrom*, in about  $16^{\circ} N.$  and  $37^{\circ} W.$

PENEDO DE SAN PEDRO, lat.  $0^{\circ} 55' N.$ , long.  $29^{\circ} 15' W.$  This group of rocks is described in our Memoir on the Atlantic, eighth edition, p. 447.

Commodore Brou, of the French frigate *Hermione*, in 1825, describes Peñedo de San Pedro as a mile in extent, in a N.E. and S.W. direction; seen in fine weather four to five leagues off; when bearing N.W. appearing in the form of three pinnacles of sharp naked rocks of a remarkable shape. The S.W. pinnacle separated a short distance from the others. The latter appears safe to approach, and no breakers were seen, to indicate sunken rocks. The *Hermione* sailed round on the eastern side, at the distance of 5 miles; did not try for soundings; but from the colour of the water it was presumed that bottom would not be found.

The Equatorial current set the ship to the westward at the mean rate of 18 miles, and to the North six miles, in the 24 hours, between the parallel of  $8^{\circ} N.$  and the Equator, and the meridians of  $28^{\circ}$  and  $3^{\circ} W.$  At the islets the direction of the current changed, and set more to the northward at three quarters of a mile in the hour.

The Commodore gives the position as  $0^{\circ} 51' N.$ , and  $29^{\circ} 23' W.$  We conclude that this is wrong. Captain Forster gave it as  $0^{\circ} 56' N.$ , and  $22^{\circ} 15' 12''$ . We, therefore, continue our original statement, as given in the Memoir on the Atlantic.

The best description of these isles is that of Captain Amasa Delano, who, in the American ship *Perseverance*, from Boston toward Cape Horn, 23rd Dec. 1799, at 2 p.m., saw three small islands bearing W. by S. two or three leagues distant. The vessel bore away, and at 3 p.m. was abreast of them. Hoisted the small boat out, went on shore, and found them to be nothing more than a cluster of craggy rocks, about one fourth of a mile in extent from North to South, and nearly as much from East to West. No sort of vegetation existed upon them. The rocks were found to be five in number, but only two of any considerable magnitude. Their greatest extent was from N.N.E. to S.S.W. The two largest nearly connect with each other, and form a kind of harbour, or place of shelter, for a boat, on the N.W. side. Here they managed to land, but obtained nothing excepting a number of boobies. On shore the aspect was most dreary; the sea roaring and surging on all sides. Two smaller rocks were lying off to the S.S.W. of the large ones, and one, very small, to the N.E. When on the highest part no dangers could be seen but what showed themselves above water; nor could any be discovered from the ship. Plenty of fish were caught in the harbour, or basin. At 6 p.m. returned on board. Sharks were numerous about the ship; but, in attempting to take them, a number of hooks and lines were lost, and several pair of grains broken. On sounding, within two miles of the islets, no ground could be found with a line of 200 fathoms.

Capt. Delano states that the islets may be seen at the distance of four leagues, and

always make like three sail when first seen. They are very dangerous if fallen in with by night. The current near them set N.W. by N. true, one mile an hour. The parts above the reach of the surf are covered with birds' dung. The birds were hatching their young at the time. The month of November would be the season for procuring eggs at this place, as they may be obtained at that time in abundance; but, being the eggs of oceanic birds, they are rather fishy than sweet.

"*Captain Fitzroy*, from his observations, places the summit of the Penedo in latitude  $0^{\circ} 55' 30''$ , and long.  $29^{\circ} 22''$ . The variation here, on the 16th of February, 1832, was  $9\frac{1}{2}^{\circ}$  W. Temperature of the air and water,  $82^{\circ}$ . Wind S.E. The rocks were seen on the horizon at sunset of the 15th. They appeared extremely small, at about 8 miles distant. At daylight, next morning, two boats were sent to land upon and examine them, while the *Beagle* sailed round, sounding and taking angles. Good observations were made during the day, as the sky was clear, and the water smooth.

"From the highest point of the rocks, which is 64 feet above the sea, no discoloured water, nor any breaking of the sea, could be discerned, apart from the place itself; and from the soundings taken in the boats, as well as on board the ship, I conclude that it is unconnected with any shoal, being merely the summit of a deep-sided mountain, rising from the bottom of the ocean. A slight current was setting to the westward, not amounting to a mile an hour."—Vol. ii. p. 56.

## VI.—FERNANDO NORONHA, AND THE ROCCAS.

FERNANDO [FERNÃO] NORONHA.—The position of Fernando Noronha was formerly given as  $3^{\circ} 56' 20''$  S., and  $32^{\circ} 28' W.$ , from Mr. Wales's chronometric observations, 9th June, 1775. Captain Cook reckoned it as  $3^{\circ} 53' S.$ , and  $32^{\circ} 24' W.$  Captain Hewett, in 1817, gave it as  $3^{\circ} 64' S.$ , and  $32^{\circ} 31'' W.$ ; but, from Captain Foster's observations, revised by Dr. Tiarks, the peak or pyramid is given as in  $3^{\circ} 50' 10'' S.$ , and  $32^{\circ} 23' 45''$ .

This island is remarkable by a high rocky peak on its North side, called the *Pyramid*, very barren and rugged; and by its S.W. point, named the *Hole in the Wall*, which is pierced through, and gives a free passage to the sea. The Pyramid appears, at a distance, like a very high steeple or tower. The South side is distinguishable by a little rocky isle, that appears like a statue. The island is about seven miles long, and two or two and a quarter broad. It has been the rendezvous of vessels employed in the southern whale fishery, &c., for procuring supplies of cattle, sheep, poultry, wood, &c.; but water is frequently scarce. East India ships have also occasionally touched here when they have been horsed to the westward by the currents.\*

On approaching the island no soundings will be found, until very close in. There is no danger but what may be seen, excepting a rocky spot off the South side, between two and three miles from shore, and a rock at about a quarter of a mile from the S.W. point.

The road or principal anchorage is on the North side of the island, being sheltered by the north-eastern land, and several islets in that direction. The anchorage has from ten to twelve fathoms, loose sandy ground, at about half a mile from the citadel point, or nearest shore. It is unsafe to lie in with northerly or N.W. winds, which are said to prevail from December to April; in the other months the winds are mostly from the S.E. or easterly; sometimes at N.E.

Water may be obtained here; but, in the dry season, it is sometimes very scarce. In seasons of drought, which are not uncommon, the rivulets are dried up, and the vegetation parched. There are but few vegetables, but plenty of live stock and fish, with an immense quantity of doves. The fresh water is obtained from a well near the governor's house, in the cove called WATER BAY; but the cask must be rolled over some rocks, and swung off to the boat, over the impeding surf.

Wood is cut on the larger islet to the N.E., called WOODING or RAT ISLAND. This islet is nearly surrounded by rocks, and there is a risk of staving the boat when taking off the wood, as it is heavy, and sinks if thrown into the water. Should the governor permit wood to be cut on the main island it may be conveyed without much danger, from the fine sandy bays to the westward of the road.

\* A Survey of the Island, on a large scale, with appearances of the land, &c., is published by Mr. Laurie.



On the 9th of April, 1827, H.M. ship *Cambridge*, Captain T. J. Maling, touched here, and there were, at the time, about 200 inhabitants upon the island: of these 60 were soldiers, under the government of a Prussian officer, who, with the assistance of an engineer, was repairing the fortifications, and erecting new points of defence.

From Tobacco Point, or the South point of the island, a reef of rocks, even with the water, extends half a mile to the southward; and to the S.E. by E., two and a half miles from the same point, is the centre of a rocky patch, on which the sea always breaks. When in a line with these rocks the pyramid is shut in with the highest hill on the South side of the island. Between this reef and the shore is a channel of from ten to fifteen fathoms.

The current here commonly sets strongly to the westward, for which due allowance must be made in rounding the islands on the N.E.

On the 6th of June, 1830, Captain Foster, in H.M. ship *Chanticleer*, bade adieu to Ascension, and in six days came to an anchor off the village in the *Peak Bay* of Fernando Noronha.

*Fernando Noronha* has been copiously and finely described by Mr. Webster. The large island, he says, is still used by the Brazilians as a place of transportation for criminals, as well as for the exile of political delinquents. The beautiful scenery of this island is enchanting. The shore is scooped out by inlets, and embossed with green promontories, which are connected by circling beaches, where rippling waves chase each other over the silvery sands, and bathe the flowerets of the skirting woods. A fresh, luxuriant verdure crowns the summits of the hills, blending its soft hue with the general contour of the island. A richness and variety of vegetation is seen everywhere, excepting on the colossal pyramid of naked rock, which, rising from the bosom of a grove, stands erect in barren ruggedness, towering majestically over the smiling and fruitful scenes around. It is a gigantic block, the summit being 800 feet above the level of the sea, and is an excellent mark for seamen.

The scenery throughout is all fertility and beauty. There are no romantic hills and dales, but everything is on a moderate scale, and pleasing to the eye. The vegetation is that of a thickly wooded grove, rather than that of the dense forest, for it admits of a walk even through its most shaded parts. There is an inland lake in the island, and one or two trifling brooks, but no permanent streams of any importance. In the wet seasons the island is one continued swamp and bog; while in the summer it is dry and arid, and occasionally altogether deficient of water.

Few of the trees are of sufficient magnitude to afford timber for many useful purposes, rarely exceeding 6 or 7 inches in diameter, and the largest a foot. The most common is the dark and laurelled *Bara*, which abounds with an acrid, caustic, milky juice, very much dreaded by the woodcutters, as it produces inflammation of the skin and severe ophthalmia. This tree is, therefore, regarded as a nuisance, inasmuch as it acts as a powerful depilatory: it removes the hair from the horses and cows, and gives them a diseased appearance.

The soil is a fine, rich loam, of a considerable depth, and has a reddish tinge. There is upland pasture for sheep, and rich plains for cultivation, besides little fairy vales, blooming in all the beauty of verdure. The sandy beaches in the sandy bays are sweetly picturesque, especially in the evening; the sand is as smooth as a well-rolled path, and the gentle ripple of the waves scarcely disturbs the tranquillity which reigns around.

The island is garrisoned by a small party of Brazilian soldiers, under the command of a major, who fills the office of governor. He has a few staff officers, and about 100 men. The islands are protected by several forts, which, if in good condition and well manned, would present a formidable mean of defence.

A small village is seated on the shore of Peak Bay, built in the form of a square. The houses composing it are not worthy of note, but are sufficient for the place. A neat chapel stands on the hill over the village, which also boasts a clean and comfortable hospital, and a respectable and commodious house for the governor. The other principal buildings consist of a set of barracks for the soldiers, a tank or large cistern for water, a bath, and a prison in which the culprits are safely lodged every night, after being allowed the liberty of ranging about the island by day. Most of the houses have gardens attached to them, and the governor has a farm at a short distance from the village, from whence his table is supplied.

At about a league from the village, in a S.E. direction toward Tobacco Bay, are extensive fields of Indian corn and cotton, besides a plantation of cocoanuts and a tolerable

garden. A brick and tile manufactory is also carried on there, but there are no lime-kilns.

The employment of the people consists principally in fishing, for which purpose they have a manufactory of cotton line. Agriculture is much neglected, the greater part of the island being in a state of nature; but such is the richness of the soil, that it would repay them well for any trouble they would bestow on it.

The process of drawing the seine is very interesting. This consists of a few long stems of a creeping convolvulus with the leaves on it, which are twisted together into a kind of mass or lump. Thus prepared, it is dragged into the water just within the break of the surf; and when a fish is seen within the scope of their leafy net, they drag it quickly ashore, with a view of entangling it among the leaves. This device is sometimes very successful. The cotton hand-nets that they also use are very neatly constructed, and with these they reap a much richer harvest. Whilst the operation of drawing the seine is going forward on the beach, some are occupied in angling from the rocks of the projecting points, and among them sufficient fish is caught for the provision of all the islanders. Groups of naked fellows may be seen seated on the beach, watching the operations of the fishermen; while the pelican is diving continually about the edge of the surf, and the man-of-war bird over him, who, as the pelican rises with his prey, darts down on him with incredible rapidity, and makes him instantly disgorge it, when it is instantly seized by this second plunderer.

The attempts of these islanders at navigation are confined to the Catamaran, not a single boat being found throughout the whole island. All ideas of improvement on anything are foreign to their minds; the accoutrements of their horses are the same as those used more than a century back; and as for agriculture, they have no idea of it. The ground lies untilled before them, the earth smiles in vain, while they are ever lolling in their hammocks, smoking and gaming throughout the day, the very patterns of indolence and laziness. The evenings are passed in serenading to the notes of a guitar, or singing and revelling at some lascivious fandango. The only art for which Fernando is famous is that of rearing capons, which are of the finest description.

The island is supplied with flour and other provisions from Brasil; but the supplies are, at times, deficient. When the *Chanticleer* was here, in 1830, the governor was very glad to exchange his fresh beef for flour and biscuits. The cattle of the island are very fine, and an abundant supply of good young beef was obtained. The governor was exceedingly attentive, and sent off every morning sufficient milk for the men as well as officers. Vegetables were rather scarce, although they might be raised in any quantity. Rat Island yields a profusion of fine melons. The water melons are particularly so, and sometimes two feet long.

The climate of these isles has been described in page 6. For a description of the phenomenon called the *Rollers*, see the "Directory for the Ethiopic Ocean," pages 30 and 395.

During the stay of the *Chanticleer*, from the 12th of June to the 18th of July, the officers were kindly accommodated and most hospitably entertained by the governor and several families on the island. \*

**THE ROCCAS.**—These are dangerous low kays, in lat.  $3^{\circ} 55' S.$ , lying to the westward of Fernando Noronha, and on which the *Britannia*, East India ship, and King George, transport, deceived by the currents, were lost in 1805. The kays, or islets, are sandy, with shrubs upon them; they cannot be seen from the masthead, in the clearest weather, at the distance of more than three leagues. At their N.E. end is a high rock, and the sea breaks exceedingly high all round them. The ship *Glory*, at two miles to the West of the reefs, found bottom at twenty-eight fathoms, coral rock. The current here was found to set two and a half miles hourly to the westward. Rise and fall of tide, six feet.

Those approaching the coast, when to the westward of Fernando Noronha, must cautiously avoid the *Roccas*, and make all due allowance for the Equatorial or Westerly Current.

The longitude of the *Roccas*, lying near the parallel of Fernando Noronha, does not appear to be ascertained. In the given description of them they are stated to lie 16 or 17 leagues to the westward of the island, or in about long.  $33^{\circ} 17' W.$  The Portuguese, and Captain Birch, of the *Britannia*, have reported them as at only 15 leagues, while

M. Roussin states that they have been given at 25 leagues;\* but, upon the whole, we presume that the longitude  $33^{\circ} 30'$ , the mean of observations made in ten ships, as quoted by Captain Horsburgh, is not, westward, far from the truth. Captain Birch has said, that the rocks most dangerous are to the North and N.E., and the whole extent may be about five miles.

### SECTION III.

#### THE NORTHERN COAST OF BRASIL, FROM CAPE ST. ROQUE WESTWARD; INCLUDING ARACATI, CIARA OR SEARA, TUTOYA, MARANHAM, AND PARA.

##### I.—GENERAL REMARKS ON THE NORTHERN COAST OF BRASIL, AND ON PROCEEDING THERETO.

**THE COAST.**—*Cape St. Roque* is a headland in latitude  $5^{\circ} 28' 17''$  S., and  $35^{\circ} 17'$  W. nine leagues to the S.S.E. of *Point Toiro*, or *Calcanhar*, the N.E. point of Brasil. The cape, so called, is merely a down of sand, like the coast which precedes it to the South, and follows it to the North. The sand is uniformly white, and over it are several clusters of bushes. It may be known by several small *red cliffs*; but these show only when the sun is in a favourable direction; there may, however, be seen, a little to the South, several large trees near the coast: and their wholly disappearing may form a guide for proceeding northward.

The cape is not a salient point, though frequently so marked in the charts; nor does the land to the northward of it exhibit any remarkable change in appearance.

Northward of Cape St. Roque the coast gradually falls, or declines in height, to the distance of eight miles, where it forms the low point *Petetinga*; here the shore on the North forms a low bay. The point is not more remarkable than Cape St. Roque, and is to be ascertained, at a distance, by the difference of latitude only. The coast between the two is wholly of sand-downs, on which may be discovered scattered bushes of a dark green colour; and there are, here and there, some large trees, in round masses, but not definable as marks on approaching the shore. The extremity of Point *Petetinga* is given by the Baron Roussin as in latitude  $5^{\circ} 21' 35''$  S., and longitude  $35^{\circ} 19' 23''$ .

*Point Toiro*, or *Calcanhar*, the summit of which is represented in lat.  $5^{\circ} 8' 20''$  S., and long.  $35^{\circ} 30' 33''$ , is situate at the distance of six leagues N.N.W.  $\frac{1}{2}$  W. [*N.W. by N.*] from Point *Petetinga*, and the coast continues of the same nature with that which has been described, being low and sandy.

From Cape St. Roque to Point *Toiro* the shore is bordered by the *Recife*, or that remarkable ridge of coral rock, which characterizes the coast in general, as shown in the charts.† The more elevated part of this reef, within the present extent, is called *Pedras de Garca*, about 8 miles to the northward of Point *Petetinga*, and near which there is good anchorage.

**BANKS of ST. ROQUE.**—The FLATS or BANKS OF ST. ROQUE are on a great extent of shoal ground which encompasses all the N.E. coast of Brasil. They commence

\* "*Pilote du Brésil*," pages 37, 167. This we consider as erroneous.

† This belt or chain of coral rock more particularly distinguishes the eastern coast, but it may also be traced on the northern, nearly all the way to Maranham; and M. Roussin says that it seems as if its object were to defend the shore from the impetuosity of the waves, by which it is constantly assailed.

The reef, in several instances, is so exactly straight and even, as to seem the work of art, and rising like a wall from the bottom of the sea. In some places it is always covered; in others it is level with the sea at high water, and particular spots are from 6 to 10 feet above it. Its cuts or openings form the entrances to most of the creeks and harbours, as will be shown hereafter.



at Cape St. Roque in the South, and terminate beyond Point Tubaraó or Tuberon in the N.W., in an extent of 34 leagues.

The northern edge of these banks lies in latitude  $4^{\circ} 51' S.$  The longitude of the N.E. part (8 fathoms) is  $35^{\circ} 25'$ , and of the western (6 fathoms)  $36^{\circ} 36'$ .

There is a channel between the shore and the banks, which is known and used by the coasters. There are also passages between the dangerous spots on the banks, but they cannot be attempted by strangers. From the outer edge of the bank the coast, although low, may generally be seen, in clear weather, at from 10 to 12 miles off.

The more shallow parts of the bank are distinguished, generally, by breakers. Of these the easternmost is a little to the West, and about 12 miles from *Point Toiro*; but its breakers are rarely seen. The second lies to the West, near and under the meridian of  $36^{\circ}$ , off a point called *Tres Irmaos*, or *Three Brothers*. This is named the *Lavandeira*, and occupies a great extent from East to West. The third and westernmost is a group of rocks called the *Urcas*, in longitude  $36^{\circ} 18'$ . The breakers on the *Lavandeira* and *Urcas* are very heavy at all times, but particularly when the wind blows from the offing toward shore. The Bank or *Parcel* of St. Roque, with 6 or 7 fathoms, terminates at about six leagues West from the *Urcas*.

On advancing to the edge of the Banks soundings of light sand will be found, with an admixture of broken coral, and a sudden discolouration of the water from its oceanic blue to a green colour. Hereabout the tide rises from 6 to 8 feet.

**THE COAST** RESUMED.—*Beyond Point Toiro*, or the great elbow of land to the northward of Cape St. Roque, the coast, extending W.N.W., is generally low, and has few distinguishing objects. To the south-eastward of Seara [Ciara], or longitude about  $38\frac{1}{2}^{\circ}$ , there are, however, many inland and beautiful hills, and the coast is bordered with that remarkable ridge or reef of coral rock, which has been described. This reef, with frequent breaks, continues along shore nineteen leagues to the north-westward of Seara; and within this extent the land is moderately high; but it declines thence westward, and presents a low shore, with sand-downs, some of which are very little above the surface of the sea. The latter will be given in detail hereafter. The soundings, as they generally are off such coasts, are mostly regular, and decrease gradually toward the shore, from a distance of 4 or 5 leagues.

There will be no difficulty in navigating the coast, if proper attention and caution be exercised. A strict masthead lookout should be kept; the lead should be constantly going; you should be distrustful of your distance from the land, both by day and night; and be acquainted with the tides.

The WINDS and SEASONS of Brasil have been described in pages 1 to 6. For the TIDES, see pages 6 and 7. For the CURRENTS, pages 9, 10, 11.

#### POSITIONS OF THE PRINCIPAL POINTS, ETC. ?

	Latitude S.	Longitude W.
CAPE SAN ROQUE; the summit of the Cliff	$5^{\circ} 28' 17''$	$35^{\circ} 17' 12''$
Point Petetinga; the base	$5^{\circ} 21' 35''$	$35^{\circ} 19' 23''$
Point Gamalera; the Down	$5^{\circ} 12' 24''$	$35^{\circ} 29' 55''$
Point Toiro, or Calcanhar; the N.E. extremity of Brasil: summit	$5^{\circ} 8' 20''$	$35^{\circ} 30' 33''$
Lavandeira Breaker	$4^{\circ} 54' 40''$	$36^{\circ} 2' 8''$
Breakers on the Urcas	$4^{\circ} 51' 32''$	$36^{\circ} 36' 28''$
Point Tubaraó: North Down	$5^{\circ} 1' 49''$	$36^{\circ} 28' 3''$
Point do Mel	$4^{\circ} 55' 17''$	$36^{\circ} 59' 8''$
Morro Tibão	$4^{\circ} 49' 20''$	$37^{\circ} 17' 43''$
Reteiro Pequeno; remarkable hummock	$4^{\circ} 48' 16''$	$37^{\circ} 9' 5''$
Reteiro Grande; hummock on the point	$4^{\circ} 36' 20''$	$37^{\circ} 32' 48''$
Morro of Aracati (an inland hill)	$3^{\circ} 42' 10''$	$37^{\circ} 54' 3''$
Mouth of the Jaguaripe; red bluff and battery	$4^{\circ} 23' 30''$	$37^{\circ} 49' 2''$
Point Macoripe; lighthouse, fixed light at 37 feet	$3^{\circ} 41' 50''$	$38^{\circ} 30' 44''$
Ciara, otherwise Ceara, or Seara; steeple	$3^{\circ} 42' 58''$	$38^{\circ} 33' 51''$
Hills of Ciara, or Seara, as seen on the Meridian; 1st summit	$3^{\circ} 39' 27''$	$38^{\circ} 48' 8''$
Morro of Opicem	$3^{\circ} 33' 30''$	$38^{\circ} 49' 12''$
Curú; the village	$3^{\circ} 30' 0''$	$58^{\circ} 53' 2''$

	Latitude S.	Longitude W.
Hummock on Down of Parati . . . . .	3° 24' 10"	38° 59' 18"
Hummock or Moudahu Point . . . . .	3 10 0	39 17 25
Morro, or Mount Melançias . . . . .	3 11 40	39 19 24
Pernambuquinho . . . . .	3 1 50	39 37 21
Rio dos Patos; the entrance . . . . .	2 58 50	39 39 56
Mount Meruoco; the summit . . . . .	3 17 55	40 5 24
Point of Jericoácoará; highest land . . . . .	2 47 28	40 27 18
Hummock near the shore . . . . .	2 50 22	40 39 18
Moro Ticondiba; the summit . . . . .	3 10 37	40 36 38
Rio Camucin, or Camosin; hummock at the entrance . . . . .	2 50 0	40 44 58
Mount Tapuya; the western summit . . . . .	2 58 25	40 50 32
Rio Tapuya; entrance . . . . .	2 50 25	40 50 13
Rio Iguarassu; entrance; East point . . . . .	2 52 27	41 18 5
Hummock on a sandy isle . . . . .	2 48 57	41 42 44
RIO DAS PERGUIÇAS, or Perjuizas; eastern point . . . . .	2 41 27	42 27 4
LANÇÕES GRANDES; eastern point . . . . .	2 26 12	42 59 54
Hummock in the Lançoes Grandes . . . . .	2 24 12	43 5 20
Another Hummock in the same . . . . .	2 23 22	43 9 1
Morro Alegre . . . . .	2 20 17	43 13 7
St. Anna's Breakers; eastern point . . . . .	2 12 38	43 29 32
St. Anna's Lighthouse ( <i>a square tower; light revolving</i> ) . . . . .	2 16 18	43 41 22
Breakers of the Coroa Grande:		
Middle of the Northern . . . . .	2 10 50	43 57 34
----- N.W. . . . .	2 13 15	44 3 59
----- West . . . . .	2 17 0	44 5 9
MARANHAM ISLAND; white down on the North side . . . . .	2 24 36	44 4 11
Fort St. Marcos; flagstaff . . . . .	2 28 22	44 15 56
Fort St. Antonio das Areias; flagstaff . . . . .	2 29 24	44 16 49
St. LUIS DE MARANHAM; steeple of the cathedral . . . . .	2 30 44	44 16 2
Point de Bom Fim; house . . . . .	2 30 42	44 16 59
Point de Guia; red house . . . . .	2 30 43	44 18 34
Point Ataki, or Taqui; western extremity . . . . .	2 33 4	44 20 25
Rock East of the Isle Medo . . . . .	2 30 19	44 19 18
Alcantara; western steeple . . . . .	2 23 33	44 23 0
Point Tatinga, or Alcantara; the cliff . . . . .	2 23 38	44 21 14
Point Janauba; red cliffy shore . . . . .	2 22 4	44 20 17
Point Piraremo; middle of the cliff . . . . .	2 19 26	44 19 26
Mount Alegre; the summit . . . . .	2 17 16	44 19 58
Point Carnaveros . . . . .	2 12 7	44 20 54
Monte Itacolumi; the lighthouse ( <i>revolving light, red and white, in two minutes</i> ) . . . . .	2 8 38	44 24 26
Shoal of Manoel Luis; western rock . . . . .	0 51 25	44 14 37
Anchorage of La Bayadere, before the same . . . . .	0 52 3	44 14 50
Vigia, seen by M. Sylva, of the Brazilian Marine . . . . .	0 32 0	44 17 14
St. Joao, or St. John's Island; N.E. extremity . . . . .	1 14 30	44 52 0
Mount Guarapi . . . . .	0 41 0	45 57 0
Salinas, or Salina; the pilot station . . . . .	0 33 0	47 15 0
Point Tigioca . . . . .	0 32 0	47 46 0
PARA, or Belem, on the Rio Pará . . . . .	1 21 0	48 28 15
Cape Magoary [ <i>uncertain, but about</i> ] . . . . .	0 12 0	48 20 0

## II.—PARTICULAR DESCRIPTION AND SAILING DIRECTIONS.

Under the meridian of 37° is the *Point do Mel*, a broad headland, bordered with the *Recife*, and dividing two spacious bays on the East and the West. The extreme points of these are, *Point Tubarao*, at ten leagues to the E.S.E., and the *Morro Tibao*, or *Little Reteiro*, at six leagues to the W.N.W. The bank of soundings here extends to 4 or 5 leagues from shore, and near its edge, at 11 miles N.N.W.  $\frac{1}{2}$  W. from Point do Mel, lie the rocks called the *Angerstein Reef*, which will be presently described.

**ARACATI.**—The first Port of the Northern Coast of Brasil is that of ARACATI, on

the *River Jaguaripe*, a place of rising consequence. The mouth of the river, as shown in the preceding table, is in latitude  $4^{\circ} 23\frac{1}{2}'$  S., and longitude  $37^{\circ} 49'$  W. The river, from its bar to the town, was surveyed, in 1829, by Mr. *Rd. Dixon*, commander of the *Westmoreland*, of Liverpool, who obligingly transmitted to us, in the next year, his original draft, on a scale of four inches to a mile, with a copy of the directions, which follow hereafter.\*

Upon the South bank of the *Jaguaripe*, at the distance of about eleven miles from the entrance, is the town of ARACATI. At the entrance is a bar, narrow and dangerous, owing to sand-banks on each side; and upon these the surf is very violent. The sand is so loose at the mouth of the river that, even with the coasting vessels of the country, every precaution is required. The river widens immediately within the bar, and forms rather a spacious basin; but the port cannot, from the uncertainty of its depth, ever become important, and it has, at times, been nearly choked up.†

The Town of *Aracati*, a place of considerable trade, consists chiefly of one long street, extending East and West, with several minor streets branching from it to the southward. Thus far the river is influenced by the tide. At the ebb the stream is fordable; and, as it spreads considerably from the main channel, some parts remain quite dry at low water. The houses of *Aracati*, unlike those of any of the villages in the vicinity, have one story above the ground-floor, and this because the floods are sometimes so great as to render it necessary occasionally to retreat to the upper part of the houses. The town has three churches, a townhall, a prison, and about 600 inhabitants.

The following are the Remarks and Directions written by Mr. *Dixon*.—"As vessels frequently engage at *Pernambuco*, on the eastern coast, to load a cargo, or part of a cargo, at *Aracati*; they consequently proceed, in the first instance, to the N.N.E., and then North, until they have passed Cape St. Roque, and the parallel of the extensive Flats, on the North coast, bearing the same name. The latitude of the *Urcas*, the most dangerous reef on these flats, is  $4^{\circ} 50'$  S., in the longitude of  $36^{\circ} 18'$ . Having passed these shoals, by running westward, in latitude  $4^{\circ} 40'$ , or thereabout, on approaching near enough to the shore *Point do Mel* will be seen, composed of red cliffs and low white spots of sand on each side of them.‡ This point must be avoided, for when it bore about S.S.E., at the distance of seven miles, we were on a shallow bank of 17 feet, and farther to the leeward the water appeared white, and, without doubt, was shallower. Running along shore north-westward, and keeping in about 6 fathoms, *Point Reteiro Pequeno*, formerly called Cape *Corso*, will be seen, and also a mountain, appearing blue, in the interior; the former appears red, being a large bank of red sand, and the latter resembles *Bardsey's Island*, in *St. George's Channel*. When these two objects are in one, the *Reteiro Grande*, or *Algeberana Head*, will be distinctly seen. The land to the south-eastward of this head, for 3 or 4 miles, has a very singular appearance, forming like two steps, the lower part being reddish, and the other grey. The head itself is rugged, and has a pinnacle close to its base, which, when bearing W. by S., will appear open.§

At the distance of about a mile there are several rocks, of which the outermost is covered at high water: it is necessary, therefore, to give this head a good berth, until a large lump or hill, situated on the S.W. side of *Reteiro Bay*, is brought to bear S.W.: then steer toward the hill until *Reteiro Head* bears E.S.E. With these bearings there is safe anchorage in 3 fathoms of water; or, if the vessel's draught will admit, you may go farther in, and have smoother water, as the rocks off the head break off much of the sea.

\* A reduction of the chart has since been published by the Admiralty, and is also given on our chart of the coast of Brasil. Another survey of this river, by Captain *Stephen Whettem*, of the *Severn*, taken in 1844, has also been published by Mr. *Laurie*.

† *Koster's Travels in Brasil*, vol. i. p. 175.

‡ The position of *Point do Mel*, as shown in the preceding table, is lat.  $4^{\circ} 55'$ , long.  $36^{\circ} 59'$ .

§ *ANGERSTEIN REEF*.—In the month of December, 1830, the brig *Angerstein*, John Bouch, master, passed through a cluster of rocks, thirteen in number, and from 2 to 3 fathoms under water. The vessel ran close alongside of one, which was quite visible under the water, and the master, heaving the lead on it, had not more than 11 feet of water. They are not dangerous by day, but may be by night, with a sea on. Mr. Bouch describes the rocks as of a dark brown colour, showing themselves sufficiently for a vessel to pass clear of them; and, before a second cast can be got, you may be in 10 fathoms of water. "They lie in a triangular form, about 11 miles from the land, with *Ponto do Mel* S.S.E.  $\frac{1}{2}$  E., and the Red Mount on the *Reteiro* W.N.W.  $\frac{1}{2}$  W., about 8 leagues."

In the original notice of this danger the latitude was mis-stated as  $4^{\circ} 28'$  S., but the longitude correctly, as  $37^{\circ} 6'$ . With the given bearings, and distance from land, the latitude must be  $4^{\circ} 44'$  or  $4^{\circ} 45'$ . Like the *Urcas*, at 15 leagues to the eastward of them, they seem to lie on the edge of the Flats, where there is a depth of 6 fathoms, with corally ground.



Here vessels bound to Aracati generally lie at anchor, while the master proceeds thither overland to inform his consignee of his arrival, draught of water, &c. There is a house at the bottom of the bay for the accommodation of travellers, and farther up the valley are some others, where a horse and guide may be procured. The distance from this place to Aracati is about 21 English miles, and a great part of the way is along the sea-shore. The course from this anchorage to the bar of the Jaguaripe is about N.W.  $\frac{1}{2}$  N.; the distance 20 miles.

The land in the vicinity of the Bar is very barren: on the North side of the entrance is a high red bluff, and also two rocks close to the water's edge: one of these has the appearance of a large gun mounted, with a small fort and flagstaff, and some huts close to it. These objects, together with a spit of sand on the S.E. side, the breakers across the mouth of the river, and the smoothness of the water within them, are good marks by which the entrance may be readily known.

In proceeding toward the Bar a low spit of sand will be observed, which forms the S.E. side of the entrance of the river, and a ridge of heavy breakers, parallel to the shore for 2 or 3 miles, without any appearance of a passage. We approached them in our boat, and, perceiving a buoy, we soon got within the breakers, where we ascertained that this was not the channel used by the pilots, although there were 6 feet of water in it at low water. The best channel is farther to the N.W., for, besides having 3 feet at low water, it affords an easier passage out, as it lies in a N.E. and S.W. direction; whereas the former lies nearly E.N.E. and W.S.W., and is very narrow.

Both of these channels are liable to shift, and, therefore, every master ought to make himself acquainted with the state of the bar before he attempts to enter. Buoys or boats may be readily placed in the channel, or perches may be fixed on the spits, or on shore. He should also know the time of high water, and take the bar half an hour earlier.\* After passing the boat or buoy that should be moored in the deepest water between the breakers, it will be necessary to haul up S.S.E. or South, to clear a bank on the West side, that nearly dries at low water. On this bank, as well as on that to the north-eastward of it, perches ought to be fixed. So soon as this bank is cleared, the depth will increase, and a westerly course must be taken, in order to pass between the high sandy beach on the starboard, and a low bank that dries at two hours ebb, on the larboard hand. This channel, not a furlong in width, is by the pilots generally called the *Funnel*; and there are usually ten or twelve perches along the edge of the low bank. Having passed this narrow channel, it is proper to haul to the southward, to get under the sandy point on the South side of the river, into smooth water. In advancing toward *O'Neil's Bank*, which must be approached with caution, keep the lead going, and tack in good time, in order to get close to the weather shore. The channel between this bank and the shore is deep and narrow, but, after passing it, there is good anchorage in  $3\frac{1}{2}$  or 4 fathoms, where vessels generally anchor when waiting for a wind or tide to go out.

A vessel whose draught of water does not exceed 10 feet (and it would be imprudent to be much deeper for passing the bar) may sail up it at two hours' flood, to *Cook's anchorage*, where vessels generally load; and by waiting for more of flood she may go  $2\frac{1}{2}$  miles still farther up, and take in a cargo safely.

*Sailing out of this port* is more dangerous than coming in, as the wind is only favourable for passing the bar during three hours in the morning, and even then it cannot be depended upon. Should it fail, or head in the least, the vessel would be in imminent danger, as a heavy sea is always running on the bar; and the channel is so narrow that anchoring would be useless. When a vessel has been conducted through the *Funnel*, and as far down as the lowest perch, and being on the starboard tack, as much canvas should be set as she can carry, in order to give her good way over the shallowest part and through the breakers.

No vessel should attempt to go out if it has been blowing hard the day before, as a heavy sea will then be on the bar, and probably the breeze not regular.

According to the pilots and inhabitants of the place the channels often shift: the banks being composed of quicksands, the river, when swollen with rains, forces its way through them in various directions, and sometimes forms new channels, so that there is no certainty of their being long in one position. It is also affirmed that the channel is seldom deep

\* If a pilot be on board, care should be taken that, from his ignorance of the English language, he does not confuse the helmsman; a single mistake might prove fatal.

enough till after the river has been raised by continued rain; and that in the dry season vessels may be detained for months for want of sufficient water.

The Tide and Current have been already noticed. See pages 7 and 2.

**COAST between POINT TOIRO and ARACATI.**—As there appears to be no modern detail of the coast between Point Toiro and Aracati, we give the following from the old hydrographer *Pimentel*, as it may still be acceptable.

The point *Tres Irmaos* of the late charts is the *Ponta das Pedras* of the old. Off this point *Pimentel* says there are three shoals of rocks, having a channel between them and the main of 3 and 4 fathoms. At three leagues outward are reefs above water. (The *Lavandeira*.)

Of the *River Guamará* [Aguamarea] to the S.W., the distinguishing marks are two inland sugar-loaf mountains, of unequal heights. To the West is the island [point] *Tubaraó*; then follow the rivers *Armagosa*, *Cavallos*, and *Conchas*: of these rivers the first two lead to the Salinas or salt ponds of Assu, whence many parts of Brasil have been supplied. The coast hence trends N.W. to the *PONTA DO MEL*, or Honey Point, as shown on the chart: the point may be known by its high red cliffs.

At the *RIVER UPANEMA*, [*Mossocro*?] situate as shown on the chart, are natural salinas, which, like those of Assu, require no artificial means for crystallization. Here the land is very level; and on the West of the river there are, as far as a field piece can carry, red cliffs. Within land is *Monte Vermelhos*, [*Mt. Vibao*?] a sugar-loaf hill. Ships, however, should not advance into the bay, as it is full of shallows.

From the River Upanema to the N.W. the next river of any consequence is the *IAGUARIPE*, which may be known by a round bare hill of sand on the N.W., terminating in a rock below, and within land a mountain, having seven sugar-loaf points.

Five leagues inland from the *Iaguaripe* rises the range of the *GUMANE MOUNTAINS*, which extend ten leagues in the direction of East and West.

Commencing at about three leagues from the River *Iaguaripe* the land, for nearly four leagues, close to the sea, appears dark and full, with several openings close to the bays. At about half a league from the commencement of these openings are some white cliffs, in shape like a schooner, with all sails set, and head at East. So soon as this full land terminates, the coast assumes a more flat and level appearance.

**IAGUARIPE to SEARA.**—From the mouth of the *Iaguaripe* to *Point Macoripe*, on the East of Ciara or Seara, the coast trends N.W. true, (Variation,  $3^{\circ}$  W.) and the distance is twenty leagues. The shore is uniformly sandy, but bordered by that remarkable reef which has been already noticed, having many breaks and an interval between it and the sandy shore; but inland are the several mountainous ranges, named *Monte Cascavela*, *Monte Canaveiros*, *Masaranguape*, &c. *PIMENTEL* describes a bay, *IGUAPE*, at about five leagues to the southward of Seara, which now appears to have a village on it, and which, he says, forms a small harbour to the westward of some low level land. The bay is surrounded by very high perpendicular cliffs, against which the sea breaks at half tide. It has a high round rock, behind or within which is shelter and anchorage in  $2\frac{1}{2}$  or 3 fathoms. On the N.W. of this bluff rock you may anchor in the very roll of the sea, as it has 4 and 5 fathoms; and on the strand are pits for watering.

**SEARA** is the most important town upon this part of the coast. The bay on which it stands is formed by *POINT MACORIBE* (in latitude  $3^{\circ} 41' 30''$  S., and longitude  $38^{\circ} 30'$  W.) to the eastward, and by the River *Papina* to the westward, an extent of about three leagues. It is extremely open; its greatest depth being three miles.

Upon *Point Macoripe* stands a *lighthouse*, showing a *fixed* light, at 37 feet above the level of the sea, and visible 10 miles off. It was first shown on January 1st, 1847, and, according to the official notice, is in lat.  $3^{\circ} 41' 10''$ , and long.  $38^{\circ} 35' 9''$ , or 5 minutes further West than we have given it.

Abreast of the town, and at the distance of half a mile from the shore, extends a ridge of rocks, level with the water's edge, and within which small craft generally anchor, the entrance to the anchorage being around the eastern end of the reef.

The land within *POINT MACORIBE* is a high and irregular sandhill, terminating in a point, which has a battery and tower near the extremity. Ships advancing from the N.E. should not approach the point nearer than two miles, and should choose a berth without the points which form the bay. His Majesty's ship *Inconstant*, in 1814, was the first



English ship of war that had anchored here during the memory of the oldest inhabitants ; having brought up in a spot which had previously been occupied by the American frigate *Constitution*.

Mr. Henry Koster, in the Narrative of his Travels in Brasil, has given the following description of Seara, &c.

SEARA.—The *Villa da Fortaleza do Seara Grande*, or town of the fortress of Seara, is built upon heavy sand, in the form of a square, with four streets leading from it, and it has an additional long street on the North side of the square, which extends in a parallel direction, but is unconnected with it. The dwellings have a ground floor only, and the streets are not paved ; but some of the houses have footpaths of brick in front. It contains three churches, the governor's palace, the town hall and prison, a customhouse, and the treasury.

The inhabitants are computed at about 1200. The fort, from which the place derives its name, stands upon a sandhill close to the town, and consists of a sand or earth rampart toward the sea, and of stakes driven into the ground on the land side. It has about half a dozen ill-arranged guns. The powder magazine is situated upon another part of the sandhill, in full view of the harbour. There is not much to invite the preference given to this spot ; it has no river, nor any harbour, and the beach is bad to land upon : the breakers are violent, and the *recife*, or reef, affords very little protection to vessels riding at anchor within it. The settlement was formerly situated three leagues more to the north-westward, upon a narrow creek, (*Papina*), where there now exists only the ruins of an old fort. The beach is steep, which renders the surf dangerous for a boat to pass through in making for the shore, and landing is particularly inconvenient. The anchoring ground is bad and exposed ; the winds are always from the southward and eastward ; if they were very variable, a vessel could scarcely ride upon the coast.

Little of the city is visible from the sea, except the old fortress (La Fortaleza, above described,) and the few huts which line its sides. On the left of the town there is a small river, whose banks are adorned with *coqueiros*.

The public buildings are not large, and are constructed in the usual Brazilian manner. The city does not contain a convent, nor any monastic edifice. This remark applies to the whole of Ceara, but to no other province in Brasil. The only finished church in Ceara is that of Nossa Senhora do Rozario, the especial protectress of the negroes. That of the Conception, frequented by the whites, was a few years ago pulled down, in order to be rebuilt on a larger scale ; but the work stopped when the walls were about half erected, and still remains in that condition.

The bay of Ceara opens to the North, forming a regular and spacious semicircular form. The harbour is said to become annually shallower from the sand filling it up. Mr. Kidder says, in 1842, "At the time of our arrival, a few coasting smacks and an English brig were all the vessels in port. The landing is nowhere good, on account of the heavy surf that continually breaks upon the strand. Adapted to this, the pilot boat in which I went on shore was guarded by strong outriggers to prevent capsizing, but even then did not willingly come in contact with the shore." After conveying passengers from the shore to a fordable depth, they are landed in a *paviola*, a kind of chair elevated on poles, and carried by four men in the same manner as a *bier*.

The *recife* or reef forms a complete ridge, at a considerable distance from the shore, and is to be seen at low water. It extends parallel with the shore for about one-quarter of a mile, with two openings, one above and the other below the town. A small vessel may come to anchor between it and the shore ; but a ship can bring up in only one of the openings of the ridge, or on the outside of it. A vessel coming in from the northward should make *Point Macoripe*, which is  $2\frac{1}{2}$  miles to the eastward of the town, with a small fort on it, and may thence bring up in 6 or 5 fathoms. On the appearance of a ship the town-fort displays a white flag upon a tall flag staff.

*Northward of Seara*, about a mile from shore, is a rock, called *Pedra da Velha*, or the *Old Woman's Rock*, which may be known by the breakers over it. Within this, at half the distance, is another, called *Lobvendo* ; and next, that portion of the *recife* within which and the beach small vessels may anchor. Eastward of the latter are three other rocky patches, of which the last is three-quarters of a mile to the West of *Point Macoripe* ; and between this and the point is anchorage, under the latter, in 5 fathoms.

The *Inner anchorage*, above mentioned, is between the *recife* or reef and the shore. You enter by the eastern channel and go out by the western, when you cannot fetch out by the eastern one. Here a vessel lies at low water, surrounded by breakers, except in the



channels; and, as the pilots are very inattentive, it is altogether very dangerous. This is, nevertheless, becoming a place of very considerable trade.

*The Baron Roussin*, in his "*Pilote du Brésil*," makes the following remarks on Seara. Ciara\* is the capital of the province of the same name. Its anchorage cannot be considered as a harbour, being exposed to all winds between N.W. and East, which are frequent hereabout; but the ground is excellent for holding, from three miles off the land to the reef, which includes the inner roadstead.

In the outer roadstead, at from one to three miles from land, are from 6 to 10 fathoms of water; bottom of soft sandstone covered with sandy oaze, and in which the anchor holds well. The coasters enter the inner road by two passes formed in the reef, at 200 fathoms asunder; the depth in these passes is about 13 feet at high water. The export trade of this place is chiefly in cotton, hides, and the dried meat whereof there is so great a consumption in the southern provinces.

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*Directions for Seara, by Captain the Hon. W. Wellesley, commanding  
H.M.S. Sapphire.†*

SEARA cannot, with propriety, be called a port, nor in any but a tropical climate would it be thought a secure roadstead. I believe it to be perfectly safe, particularly from December to May, and we have the precedent of several large ships, namely, the American frigate *Constitution*, during the war; and soon after the *Inconstant* and *Isis*, English frigates, having laid there with impunity.

When bound for Seara run down in the latitude of Point Macoripe, ( $3^{\circ} 41' S.$ ) to which give a good berth, until the castle bears S.W., then run down direct for it until Point Macoripe bears E.S.E.; do not go any farther in until a pilot comes off, which will be in a catamaran. There are four high mountains at about five leagues to the S.W. of the town, which may be seen from a distance of nine leagues in the offing, and by which the port of Seara is easily recognised.

Point Macoripe being a sandy bluff, abruptly terminating, if you know your longitude nearly, it cannot well be mistaken, and the land on this part of the coast is moderately high. Running in toward it you will discover the reef breaking off; and inside of it a good berth will open the town and show the steeple, &c.

From 11 and 10 fathoms, (standing in for the town,) you will shoalen your water to 7 and 6, when you may either anchor or heave-to, and wait for the pilot, should he be coming off. If there are any merchant vessels lading they will be well to the westward, protected, in a small degree, by the reef.

The landing is very difficult and uncertain. It can be effected only from half-tide to half-tide, and then by the help of the towns-people, who, with their negroes, are in attendance, to carry you out of the boat in a chair. This is owing to the reef that lies in a direction parallel with the beach, and about 300 yards from it: these begin to appear at half-ebb, and then make a kind of breakwater until half-flood, when the water, dashing over them, creates a surf in which it is impossible for a boat to live.

The Pilotage charged for the Sapphire, at Seara, was eight Spanish dollars.

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*Remarks on the Port of Seara, by Captain George Cheveley, of  
Liverpool.*

"On going into Seara I would not advise vessels to run too far into the Bay, but to keep within a mile inside of the weather point, (Macoripe,) and, if possible, to avoid coming to anchor; for, as in most of the open roadsteads in Brasil, you will likely have to leave your anchor behind. Stand off and on, upon the West side of the Bay, and a pilot, on a *Jean guendo*, will soon come off, and run you into the harbour, (if it may be so called,)

\* In giving Seara for Ciara, we follow the pronunciation and general custom; but Ciara is the proper name.

† Originally given in the *Nautical Magazine*, 1833, and therefore before the erection of the light-house on Point Macoripe.

which is sheltered from the sea only by the reef of rocks, which are barely seen at low water. When at anchor within this reef be careful to ride with a good scope of cable; for hard squalls are frequent, and I have driven with a clear anchor and 40 fathoms of chain. It is also advisable to keep a good night watch, and a second anchor in readiness to let go at any moment.

"While lying here it appeared, from my observations, that the latitude of the anchorage was  $3^{\circ} 43' S.$  Point Macoripe, (now distinguished by the lighthouse,)  $3^{\circ} 40'.$ "

Many of the natives are grossly dishonest, while lost in ignorance and superstition. Even the upper grades may pride themselves on these *enviable* qualities. While Captain Cheveley's vessel was driving and nearly on the reefs, with the ensign union down, they kept up a constant fire upon her from the fort, declaring that she was running away, in order to avoid the port charges, although not one-half of the cargo was on board; and, upon remonstrance, both captain and consignee were threatened with imprisonment.

**COAST WESTWARD** of SEARA.—From off Seara H.M.S. *Sapphire* proceeded on a N.W.  $\frac{1}{2}$  W. and N.W. course, along the land, at not more than four miles' distance, in from 13 to 11 fathoms, until she arrived at the village of *Curú*, a distance of about ten leagues. When abreast of it, says the Captain, the decrease of soundings to 9 and 7 fathoms warned me off. There is a heavy breaking shoal extending from the point on which this village stands; and, in case any one not knowing his longitude should make it, it may not be amiss to state that we saw catamarans, with their sails hoisted to dry on the beach, which had exactly the appearance of large boats sailing upon a river, until the regularity of their distance, and a nearer approach, dispelled the illusion.

Hauling out from *Curú* the water did not deepen for a considerable time. By the *Sapphire's* observations *Curú* appeared to be in latitude  $3^{\circ} 28' S.$ , and long.  $39^{\circ} 0' W.$  In the Baron Roussin's chart a village, probably intended for the same, is represented in  $3^{\circ} 30' S.$  and  $38^{\circ} 52' W.$

RESUMING the COAST at SEARA we now proceed to observe that, from *Point Macoripe* the coast trends N.  $56^{\circ} W.$ , true, to the meridian of *Mount Melançia*, a distance of nearly 19 leagues. This mount, so called, is an insulated sandhill near the coast. In the intermediate distance you pass, successively, before the mouths of the *Papina* or *Rio de Ciara Velha*, *Rio Cioppé*, and *Rio Curú*, with the *Morro*, or *Hill of Curú*, and the *Serra de Mandahú*, in the interior of the country, called also the *Serra Grande*.

All this coast is sterile and desert in the part next the sea, and shows no trace of culture nor inhabitants; it being one undiversified series of low downs and loose sand. The coast is clean; and, at two or three miles from it, are found from 6 to 13 fathoms of water, with fine gray sand.

From *Mount Melançia* the coast takes a more westerly direction, and trends N.  $64^{\circ} W.$ , true, eleven leagues, to a village named *Almufedas*; then N.  $69^{\circ} W.$ , five leagues, to *Point Tapagi*.

The village of *Almufedas*, standing within the sand-down on the shore, is situated on the border of a small river, *Aracati-Miram*, navigable by coasters. From the offing its steeple may be seen among a group of cocoa trees. It stands in  $2^{\circ} 56' S.$  and  $39^{\circ} 48' W.$

This village serves to indicate the commencement of a bank which extends thence nearly to the little hamlet of *Jericoácoará*, situate about 40 miles more to the westward.

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### *Remarks on coming in from Sea, toward the Coast westward of Seara.*

VESSELS COMING IN FROM SEA, when bound to the westward, or to the port of *MARANHAM*, may happen to fall in with the land as far to the eastward as *Seara*; in this case, as shown by Captain Wellesley, it will be found higher than any to the westward; and magnificent mountains, some leagues inland, (the only fine feature on the northern coast of Brasil,) will be seen. *Point Macoripe*, on the East of Seara, says the same gentleman, may be known by its being a sandy bluff, terminating rather suddenly. But, upon whatever part you advance, it will be needless to approach nearer than six or seven miles, until,

in fact, the land is just clearly discerned off the deck ; that is, *if your object be to make a passage.*

If you come upon the land toward the evening, and have run sufficiently near to make it out, as above said, a N.W. by W.  $\frac{1}{2}$  W. course will not be more than a safe course to haul off on for the night, or you may stand off to 22 fathoms, in the parallel of about two degrees South, and inward to 7 fathoms. It is seldom, under any circumstances, that vessels find themselves farther off the land than they expected in the morning.

H.M.S. *Sapphire* was in less than 10 fathoms of water the whole of the first night she was on the coast ; but Captain Wellesley has said that he would not willingly go so near again ; being sensible, not so much of the danger, as the inutility of such a close approach.

### DESCRIPTION OF THE COAST CONTINUED.

Between *Point Tapaji*, and the Point of *Jericoácoará*, above noticed, the coast trends nearly East and West, in a distance of nine leagues ; from *Jericoácoará* to the mouth of the *Rio Camucin* or *Camosin* it forms a slender bay, in extent 6 leagues ; from the Camucin to another river, the *Tamonha* or *Tamonía*, it again trends nearly West,  $5\frac{1}{2}$  leagues ; and from the latter to the *Iguarassu*  $6\frac{1}{2}$  leagues.

Off *Mount Melancia*, (longitude  $39^{\circ} 18'$ ) noticed on page 58, a bank commences, which thence extends all the way to the river *Iguarassu*, an extent of 45 leagues. This bank, which is called in the country *Pracel de Caracu*, from the name of the most considerable hamlet on this part of the coast, extends outward about  $3\frac{1}{2}$  leagues from the shore, and is circumscribed by the depth of 6 fathoms. Upon the bank, off the village of *Almufedas*, there are  $4\frac{1}{2}$  fathoms at 5 miles from shore ; and at 3 leagues North from *Point Tapaji*, are 6 fathoms : and there are similar depths thence westward all the way to the *Iguarassu*. From the edge of the bank, in 7 fathoms, the water gradually shoalens to half a fathom near shore : but, owing to this gradual decrease in depth, there are no breakers. Those approaching may, therefore, advance safely, by keeping the hand-lead going.\*

Large vessels coming in from sea, and proceeding westward, should keep off, at four leagues from the land ; the coast being so low that, at a safe distance, the tops of cocoa trees only can be occasionally seen, and in the finest weather.

When you have advanced to about 8 miles from the coast, on the meridian of Caracu, [ $40^{\circ} 11' W.$ ,] and continue on a westerly route, upon approaching a little nearer to the land you will discern some huts, which form the hamlet of *Castelhanos* ; but this is not requisite for a vessel of any size ; and those drawing 15 feet of water should not come nearer to the shore than 10 miles, where they will find 6 or 7 fathoms and less water, as well as to the westward of the meridian of *Jericoácoará*.

When you may be westward of *Jericoácoará* the draught of the vessels and soundings will determine the distance to which it may be proper to approach the bight. The bottom here has been represented as sufficiently clear to allow a vessel to come in without danger, and as having 4 fathoms of water at half a mile from the cove.

**JERICOACOARA.**—This bight or cove is formed, by the broken ridge, or ledge of rocks, with which the coast is bordered, into a small basin between them and the shore. The waves commonly beat high on the reef, and break over it into the tranquil basin. On the shore may be occasionally seen the temporary huts of the *Sertanejos*, or the inhabitants of the *Sertao* or interior country. These huts are formed of perches fixed in the earth at one of their extremities, united at the other, and covered with cowskins as a protection from the wind ; they appear to remain only while the coasters come to take off the hides, &c., which are sold here, and which are produced, in great quantities, by the cattle in the neighbourhood.

*Admiral Roussin* says that, in passing several days before *Jericoácoará*, several vessels were engaged in procuring poultry and cattle, of which there was a great number at a low price. These resources, in certain cases, navigators may be happy to find. No vegetable, however, fit for the nourishment of man, is to be obtained ; and fish, though taken on the rocks or in the basin, upon the retiring of the sea, are not abundant.

By digging pits on the beach, hereabout, potable water may be obtained. Spring tides in the basin were found to rise from 10 to 12 feet.

\* The coasters, having nothing to fear, sometimes enter, according to their draught of water, the mouths of the little rivers *Tapaji* and *Caracu*.—*M. Roussin*.



According to M. Roussin, the down which forms the eastern shore of Jericoácoará stands in latitude  $2^{\circ} 47' 28''$ , long.  $40^{\circ} 27' 16''$ .—Variation of the needle, at two leagues to the northward, in January, 1820,  $2^{\circ} 23' W$ .

The coast which follows Jericoácoará, to the westward, is a low shore of white sand, having, in the interior, clumps of small bushes, and without it the ridge or border of rock. Hence follow, in succession, as shown in the chart, the mouths of the little rivers *Camucin* or *Camosin*, *Tapuya*, *Tamonha*, &c., which may be seen on advancing very near to the shore. The first of these is the only one navigable for coasters of any draught; the others will admit boats only.

At from one to four miles of distance from this coast are found from 4 to 8 fathoms of water, bottom of oaze, sand, and madrepores, or coralline substances.

**The PERNAIBAO**, or PARANAHYBA,\* &c.—The portion of coast between the *Barra de Iguarassu*, the easternmost branch of the *Rio Pernaibaó*, and the *Barra de Tutoya*, its westernmost, has generally been exhibited very incorrectly in the charts. The distance between the mouths is between 9 and 10 leagues, within which extent the *Rio Pernaibaó*, or *Paranahyba*, discharges itself by four others, namely the *Barra Velha*, and the *Barras do Meio*, *do Caju*, and *das Canarias*. All these openings are formed by a group of low isles, composing the *della* of the *Pernaibaó*, and the five of which, next to the sea, afford excellent pasturage for cattle.

THE HARBOUR OF TUTOYA, on the West, has lately been described as the only harbour, along the extensive line of coast between Bahia, in latitude  $13^{\circ}$  South, and the Maranon, under the Equator, that admits of the bar being crossed at all times of the moon, by vessels drawing from 14 to 15 feet of water.

THE BAR of IGUARASSU, and the BARRA VELHA, the two easternmost passages, have become unnavigable for ships; and, in consequence of the formation of sand-banks to leeward, vessels now proceed to enter by the *Barra de Tutoya*, for which branch of the river a pilot may be obtained.

The *Bar* of *Tutoya* is described as of great breadth; some say six miles. The masters of two English vessels, who have sounded on it, never found less than 5 and 6 fathoms of water; but, as it has not yet been correctly surveyed, caution is required.

The charts have exhibited a rock, called *Pedra do Sul*, between the *Barra Velha* and *Barra do Meio*; but M. Roussin says that this is not a danger really to be feared, being only a break of the reef on the coast, and does not extend more than a mile along shore. On approaching the coast hereabout, in fine weather, you may see, at the distance of 10 or 12 leagues to the south-eastward, the high lands of the interior, named the *Serras dos Cocos*, *Serras de Hybiappaba*, which are the last mountains that come in sight between this and Maranham, to those proceeding westward.

\* “The RIO DE PERNAIBAO, or PARANAHYBA, is one of the largest rivers in Brasil; and, in a commercial point of view, is of the highest importance. It is formed by three streams of the same name, that take their rise in the borders of the Sierra, which bounds the province of Piahy on the S.W. [Lat.  $10^{\circ} 45' S$ .] The first tributary is the *Rio Bolsas*, the only one, in fact, that joins it on the left bank. Near this confluence the *Rio Urussuhy* enters it on the right bank, and comes down from the same Sierra. At 28 leagues lower down the *Gorguea*, having taken its rise in the Sierra of the same name, and formed in the early part of its course the *Lake Pernagaa*, is incorporated with it. At 36 leagues farther, it receives the *Caninde*, which flows from the Sierra dos Irmaos to N.E., and at six more the *Poty* falls into it. After 44 leagues of its course the *Rio Longa* joins it; at a little below which a small arm issues from the Pernaibao to the East, and forms a large lake called *Encantada*, the island between it and the river being about 5 miles in length. At seven leagues farther down, this river divides itself into two rather unequal streams, and ultimately enters the ocean by six branches, separated by the five islands above mentioned.

“The distance of the *Villa de Pernaibao* from the *Barra de Iguarassu* is about eight [not eighty] miles.” See *Nautical Magazine*, Vol. I. 310, 312.

THE PROVINCE of PIAHY, on the western side of which this river runs, is divided into five comarcas, three of which are said to be kept in an orderly state of administration. The others are usually in the most unsafe condition. This province has but twenty leagues of sea coast; but it extends to the South and inland about 400 miles. It is generally level, and in some parts undulated. It has extensive unwooded plains, with large herds of cattle. Silver, lead, and iron mines are said to abound. The soil in many parts is well adapted for the cultivation of mandioca, rice, maize, cotton, and sugar-canes. Its principal river is the Pernaibao. Its capital is Oeyras, 260 miles inland, with about 5,000 inhabitants. There is no seaport for foreign trade, but it carries on some coasting traffic.

It is advisable not to approach the coast of the embouchures or mouths of the Pernaíba nearer than to four or five miles, and not farther in than to a depth of 8 fathoms. The sea is very muddy, and the bottom of oozy sand, before these passages; the ground is, therefore, bad for anchoring. Eight or ten fathoms may be found at four or five miles from land.

TO THE WEST OF THE PORT OF TUTOYA the coast gradually abates in height. The shore is composed of flats of sand, with woods in the interior only. The coast exhibits sandhills of a shining white colour, without any verdure; and, having the appearance of linen cloths, or extended sheets, they have received the name of *Lançoes Pequenos* [Little Sheets,] in contra-distinction to a more extensive range to the westward, named *Lançoes Grandes*, [The Great Sheets.]

The *Lançoes Pequenos* occupy an extent of coast terminated on the West by the *River Perçuigas*, near which are some breakers of the same name.

THE RIVER PERÇUIÇAS separates the *Lançoes Grandes* from the *Lançoes Pequenos*. A long spit extending from this river is formed, as are all the banks, and even the islands on this coast, by the tide of the river meeting the current of the sea. H.M.S. *Sapphire* crossed this bank by night, in 5 fathoms, and the *Mersey* in  $3\frac{1}{2}$ , but in 7 fathoms a ship will be quite close enough.

If the coast be made from the northward, about the *Perçuigas* and *Lançoes Pequenos*, soundings will be struck in 19 or 20 fathoms, and soon after in 13; and from thence regular bottom will be found in 10 or 11 fathoms, until the vessel is close enough to haul off and steer along the land. The land hereabout is green, interspersed with sandhills. It is low and irregular; but in one place there is an extent of a mile or two of white sand, crowned with green of a regular height.

In keeping at 8 or 10 miles from this part of the coast you will be at a sufficient distance to avoid all danger; and thus you will have from 7 to 14 fathoms of water.

The river *Perçuigas* is sufficiently deep for a large and well-constructed brig to some distance from its entrance; but the interior navigation is reported to be difficult.

**LANCOES GRANDES.**—The coast to the West of the mouth of the *Perçuigas* trends N.  $65^{\circ}$  W. to N.  $80^{\circ}$  W., on an extent of about 17 leagues. It resembles that which precedes it to the East. Its downs are of shifting sand, of a moderate height, and their extent very near 12 leagues. Nothing can more resemble white sheets extended on land; and this aspect is very remarkable and useful, as a landfall, to those coming in from sea when bound to Maranhão, &c.

According to M. Roussin the eastern extremity of the *Lançoes Grandes* is situate in latitude  $2^{\circ} 34' 12''$  S., and  $42^{\circ} 44' 52''$  W. The western extremity in  $2^{\circ} 21' 0''$  S., and  $43^{\circ} 12'$  W.

**EMILY SHOAL.**—This shoal, which was discovered by the grounding of a French vessel, lies in about lat.  $2^{\circ} 18'$  S., long.  $43^{\circ} 7'$  W., nearly where  $4\frac{1}{2}$  fathoms are marked in the chart. The following is the notice of the shoal:\*

"When passing the *Lançoes Grandes*, and N. by E. of the most remarkable sandhill, seven or eight miles from land, in 7 to 9 fathoms, at  $\frac{1}{2}$  p. 12 p.m., the *Emily* got into shoal water upon a bank of  $2\frac{1}{2}$  fathoms, which appeared to be of small extent, around which I found 7 fathoms. The vessel was going 2 knots at the time, and at noon was in  $2^{\circ} 20' 2''$  South latitude.

"The bank is situated within a very little of the track of the sloop, *La Bayadère*, and where five between 7 and 9 fathoms are found. It is probable that this sounding was obtained on the edge of the shoal water, for I think that a vessel running four knots would cross sufficiently rapid, so as to get only one shoal sounding.

"This bank is very dangerous, because it is situated in the route that a large vessel would take, and at a distance from the land that would remove all apprehension of danger. It was at low water when I touched, or thereabouts, and from aloft only one green patch of trifling extent was to be seen, resembling others on these shores."

**MANGROVE COAST, &c.**—Immediately to the West of the *Lançoes Grandes* the coast entirely changes its aspect. Instead of being arid, and devoid of verdure, it now appears as if wholly covered with bushes and groves, so closely set that, at the distance of 4 miles, the ground between them is not to be seen. The shore is low, and is called the *Praya das Mangues Verdes*, or *Beach of Mangroves*. The sudden

\* Extract of a Letter of M. Charles Leraistre, Commander of the ship *Emily* of Nantes.

transition of colour here, from that of the Lançoes, renders it impossible to mistake this portion of coast.\*

The portion of coast, several miles to the westward of the meridian of  $43^{\circ} 24'$ , turns abruptly to the West, and southward of West. Here you have in sight the island of St. Anne, which forms, with the continent and the Isle of Maranhão, or Maranham, the great inlet called the *Bahia de St. José*.

**ISLE OF SANTA ANNA.**—This isle, a little more elevated than the lands which precede it to the East, is equally covered with mangroves and other trees; and, with the exception of its lighthouse, offers nothing remarkable when it first comes in sight. On advancing, however, you will see the breakers which lie about and to the eastward of it, of which the easternmost are 8 miles from the N.E. point of the island. Near these shoals are from 7 to 24 fathoms of water; bottom of sand.

To the West of St. Anna's Island will be seen the breakers of the CORONA GRANDE, a vast flat of rocks and sand, nearly even with the water, and extending about 5 leagues to the northward from Maranham Island.

**LIGHTHOUSE ON ST. ANNA'S ISLAND.**—This lighthouse, which was first lighted on the 1st of June, 1831, has been described in the notification as a square tower, having three distinct stories; each story diminishing as it rises. The angles bear North and South, and East and West. Its full height is about 90 feet above high water, spring tides.

In the daytime the tower has the appearance of a vessel under sail. At a considerable distance, by night, it shows a *revolving light*, visible every thirty seconds, for about ten seconds together. At a shorter distance the lights show as a permanent light, like a bright star, with a brighter light every thirty seconds.†

The Inlet of Bahia de St. José, between the continent and Maranham Island, is too shoal and dangerous for a passage to the port of Maranham, even for small vessels. The general entrance is, therefore, by the bay of St. Marcos, to the West of the Corona Grande, as will be shown hereafter.

The tide, as noticed on page 7, sets with great strength into the *Bahia de St. José*. On the first time the *Sapphire* ran along the coast she was set inside the reefs, obliged to anchor in 5 fathoms, and was thence compelled to steer out on a N.E. course, in order to get clear of them. The breakers, however, as we have noticed, always show themselves, and should be rounded in not less than 14 fathoms.

The same ship found anchorage in 7 fathoms, with the lighthouse on St. Anna's Island bearing W.S.W.  $\frac{1}{2}$  W., and Mangrove Point S.E.  $\frac{1}{2}$  E. Within the reefs the ground is bad.

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### *Captain Hewett's Description of, and Directions for the Navigation from Seara to Maranham.*

"From Seara the coast trends N.W. by W., 35 leagues, to *Point Tapaji*, and thence West, ten leagues, to *Jericoácoará*, the depth gradually increasing off shore; but a N.W. course should be pursued, in order to avoid the shoal parts of the *Bank of Caracu*. Having run one hundred miles upon the N.W. course, allowing a mile and a half per hour for the current's assistance, in soundings varying from 11 to 20 fathoms, change the course to W.  $\frac{1}{2}$  N., which is nearly the direction of the coast from Jericoácoará to Mangues Point; and it will give you a sight of the land as far as the island of St. Anna.

"When ships are bound to MARANHAM, from seaward, it is absolutely necessary to make the land considerably to the eastward; as the currents, in general, set very strongly between W.  $\frac{1}{2}$  S. and W.N.W. If, in endeavouring to make the land, you should be in latitude about three degrees South, on discovering it, you will be off Mount Melancia, or between it and Seara; if the latter, three other mountains will be observed to the S.S.E., lying nearly S.E. and N.W. of each other, which mountains are about 7 leagues to the

\* At three miles to the North of Mangrove Point M. Roussin found the magnetic needle, in the month of January, 1820, to be at Zero. Hence we conclude that there is no variation here.

† This lighthouse was destroyed by the rebels on the 23rd of June, 1839, in the hope that vessels conveying aid or relief to Maranham might be wrecked. It has since been re-instated; but according to a recent notice in the *Nautical Magazine*, (Feb. 1844,) there is no dependence to be placed on the light, it being worse than useless, from inattention.



westward of Seara, and are easily seen from that place. About this part of the coast you will have a bottom of fine sand and shells.

"If you should make land when you consider yourself in from latitude  $2^{\circ} 15' S.$  to  $2^{\circ} 30' S.$ , and have a bottom of small red and white stones, you will be off Jericoácoará; if the bottom consists of yellow, blue, and red stones, you will be off the *Paranahiba*, or *Tamonia*; and three mountains, lying nearly in the meridian of each other, in the neighbourhood of the latter, will be seen.

"The whole coast from POINT MACORIBE to PARANAHIBA is sandy to about half a league inland, whence it appears well cultivated; so that it is easily distinguishable from the coast between Paranahiba and Green Mangues (Mangroves) Point, which consists of nothing but sand, without the least sign of vegetation.

"Inclining to the shore, and observing the *Lançoes* or sand banks well, as you pass along, the entrance of the RIVER PERGUIÇAS will easily be distinguished. The sand will now begin to assume a higher and more irregular appearance; this height and irregularity does not, however, deserve the appellation of hills. When the PERGUIÇAS bears S.S.E. you will begin to shoalen your water to 8 or 9 fathoms, but a steady course should be pursued, as you will presently pass a spit formed by the sand washed from the river, and which, meeting the natural course of the current in the offing, inclines it to the N.W.

"If the day should be far advanced, when you are off this part of the coast, haul to the wind under topsails and foresail for the night; standing off into 22 or 24 fathoms, and on into 12 or 14. It would not be advisable to haul the wind before you are past the Perguiças; as, otherwise, you may be short of daylight for the operations of the ensuing day. At daylight you may bear up under all sail, pursuing the former course and distance from the shore, and toward the conclusion of the sand banks, (*Lançoes*.) the land will begin to appear a little more fertile, and Green Mangues Point will easily be distinguished."

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*On the Shoals eastward of St. Anna Island the following remarks were made by Captain Livingston, on his voyage of 1824.*

"A dangerous shoal exists at about 10 or 11 miles to the eastward of St. Anna's Island. Many vessels have narrowly escaped it. We got into 3 fathoms, with St. Anna bearing W. by N. The bottom was of fine sand, in ridges, with even 10 fathoms between; but I have no doubt that there are also coral rocks, from the manner in which the sea broke, at a little to the westward of us. About the same time, a French brig in company, the *Cesar*, of Marseilles, struck, and unshipped her rudder, at about a mile and a half to the N.E. of us, though her master assured me they had never found less than 6 fathoms. We had one cast of only two fathoms, but did not touch; so the lead must either have hit the top of a coral rock, or else a knob of sand.

"The Island of Santa Anna shows quite level in the direction we made it, and I think cannot be less than 12 miles long, in place of two or three, as commonly laid down. I have spoken with many who concur with me in this opinion, and one who has been on it states it as 12 miles long, and  $3\frac{1}{2}$  or 4 broad.

"From the appearance of the land,\* and the depths of water, both the French captain and myself thought we were on the *Coroã Grande*, or *Grand Crown*, to the westward; and, as night was rapidly coming on, we both anchored; we, in 9 fathoms, and he, at half a mile West of us, in 25 fathoms.

"The CÆSAR'S SHOAL (so called by me from the French brig above mentioned) lies about two miles South, and as much East, of the place we anchored at the evening after we were in such shallow water on it. The shoal I consider very dangerous, and think it extends three miles and a half East and West, and three North and South; but there is, at least, one other at a short distance South of it.

"I have conversed with several intelligent masters, who have been in the Maranh trade. Many have seen it. All of them seem to think that the safest mode for those bound to Maranh is to get into about  $2^{\circ}$  South or a little to the southward of  $2^{\circ}$ , and run, with great caution, until Mount Itacolumi (on which now stands a lighthouse) on the western side of Maranh Bay, and which cannot be mistaken, is seen; and I incline to their opinion: as thus, though it may occasion a little more watchfulness, repays it in safety;

\* It is to be recollected that, at this time, the lighthouse was not erected.—ED.

keeping vessels clear of the *Cæsar Shoal* and the *Coroã Grande*, as well as making them sure of not getting into the Bay of St. Jozé.

"It is to be observed that the *Cæsar's Shoal* lies in the very track formerly pointed out in the Sailing Directions for making Sta. Anna; and if the frigate *Inconstant* had run on her course a few miles farther, as shown on the chart by Capt. Hewett, without hauling up, she must have discovered it."

*Captain Hewett's Directions go on as follow* :—"When you lose sight of the Island of Sta. Anna, bearing about S.S.E., you will be abreast of the Great Crown Bank, [*Coroã Grande*,] and should keep a good lookout to the southward from the masthead; and if breakers should be discovered, or if you shoalen your water to less than 18 fathoms, haul out half a point, but no more. Your distance to be run on a N.W. by W. course will be about 13 miles, and on the westerly course, 11 miles, including one mile per hour upon each for the assistance of the current, before you alter the course to W.S.W.; which, having done, without fear, look out for MOUNT ITACOLUMI a-head, and the TAPITAPERA coast on the larboard bow." This mountain with its lighthouse and coast are described hereafter.

*M. Roussin* says that the breakers of the *Coroã Grande*, with those of the isle of Sta. Anna, may sometimes, in clear weather, be seen from the masthead, at 3 leagues off, and from the deck of a corvette, or sloop, at half this distance. They are divided into several groups, and always show, although the tide rises 12 feet. The only difference in their appearance is produced by the state of the tide, or the greater or less elevation of the waves. The northernmost point of the breakers of the *Coroã Grande* is given by the Baron as in latitude  $2^{\circ} 10' 50''$  S., longitude  $43^{\circ} 57' 32''$  W. Capt. Hewett previously gave it as very nearly the same.

On approaching the *Coroã Grande* from the North, when the sky is not clear, you may distinguish the coast of Maranham Island from that of Sta. Anna by its being higher, its masses woody, the configuration varied, and a bald white shore on the North.

**MARANHAM.**—DESCRIPTION, &c.—The BAY of SAN MARCOS [St. Mark], or Maranham Bay, is comprehended between the Island Maranhão\* and the continental coast on the West. Its principal entrance lies N.N.E. and S.S.W. The bay is navigable, in the greatest part of its extent, for large vessels, and frigates may anchor before the HARBOUR of ST. LUIS, the principal port of the bay, situate on the western coast of Maranham Island.

The entrance of the bay, being limited on each side by the dangerous shoals shown on the chart, must be approached with caution.

In this entrance, between the *Coroã Grande* on the East, and the continent on the West, is a shoal  $3\frac{1}{2}$  miles long, N.N.E. and S.S.W. It is called the MIDDLE BANK, and was originally surveyed by Captain Hewett, as shown in his particular plan of the bay. The depths over it varied from 6 to  $2\frac{1}{2}$  fathoms, and it seems probable that there may now be less water upon it. Its western side is steep, and should be approached with caution. On the eastern side the soundings are more gradual, but the channel on this side is narrower than formerly. The Middle Bank latterly has been described as connected with the *Coroã Grande*, being divided only by a swash between, of 7 to 9 fathoms. It is not, as may have been supposed, the one by which vessels generally enter, the western being the superior and ordinary channel.

ST. LUIS.—The city of St. Luis, the capital of the province of Maranham, is the seat of government and of the bishop. It occupies two small hills, situate at a short distance East and West from each other, and separated by a little valley. Several buildings are remarkable from their size, particularly the public edifices, several convents and churches, of which the principal is the cathedral, occupying the North side of a square plain, covered with grass, and lying before the palace of government. The streets are generally at right angles, but the inequality of the ground renders a walk fatiguing. The city is described hereafter.

Vessels may find at Maranham the chief resources required by the exigencies of navigation. The safety of the port permits careening; the water is good and abundant, and, on the island, beef and rice are equally gotten; but, if in want of considerable quantities, they

\* MARANHAN, or MARANHAM. It is to be regretted that we have not yet a standard nomenclature for proper names.

may be most advantageously obtained on the Alcantra or continental coast: because this is, in every respect, more fertile than the island, and more abundant in cattle, fruits, &c.

*M. Roussin* says that the temperature of the air is very high in the city; more especially from the month of December to that of June. St. Luis, standing on the West side of the island, does not experience, generally, the salutary winds from the eastward; those which arrive being very weak.

*With regard to the winds*, and other phenomena, the year may be here divided into two seasons; winter, which begins in December and ends in May, and summer, which prevails during the other six months. The first of these two seasons is that of the rains; they fall abundantly, and are accompanied with violent storms, especially in the months of February, March, April, and a part of June. The thunder and lightning are then almost permanent, and, in the squalls, the wind blows with great force from the North to the S.W. by S. Nevertheless, they do not experience at Maranham *hurricanes*, properly so called; and, even in the worst times, there are long intervals of tolerable weather. There are frequent falls of rain in the summer; and, in this season, the regular winds are mostly from E.S.E. to N.E. by the East. These being the *general winds*. See more particularly upon this subject, page 5.

The air at Maranham is generally healthy; but, in the season of the rains, fevers of a dangerous nature at times prevail, though they commonly yield to appropriate treatment. The best preservative is a regimen exempt from excess; the chief remedies are the evacuants, particularly the emetic.

*The commerce of the port* consists in cotton, rice, hides, ginger, and ipecacuanha. The quantity of the first article, cotton, exportable in 1820, amounted to 70,000 bags, of the weight of 170 lbs. each.

The TIDES are regular at St. Luis, and in the bay of St. Mark. At the anchorage before the harbour of St. Luis the flood sets to the S.S.W., and the ebb N.N.E. The velocity is one mile and seven-tenths an hour, in ordinary tides; spring tides two miles and a half. In the last case the difference of level between high and low water is  $16\frac{1}{2}$  feet, according to observations made 36 hours after the full moon of January, 1820, near Fort St. Antonio. In ordinary tides the vertical rise of water is not more than 10 feet. High water in the harbour, on the full and change, at 7 h.

DESCRIPTION BY MR. HENRY KOSTER.—This gentleman, in describing the Port of Maranham,\* says that they took the channel to the eastward of the Middle Band, then passed the Fort of St. Marcos, and came to an anchor very near to the sandbanks at the mouth of the harbour of St. Luis. No pilot came off, and the master, with Mr. Koster, got into the boat, intending to fetch one, when a signal with an enormous speaking-trumpet gave orders not to proceed to the city, and they were informed that a pilot would come in due time. A pilot at length arrived, accompanied by a soldier and customhouse officer. As the brig went up the harbour, she received the health and customhouse visit, composed of men smartly dressed; the administrator of the customs being in the uniform of a cavalry officer; but the regulations of the port proved both tedious and troublesome.

*"The harbour is formed by a creek in the island, and is to be entered from the Bay of St. Marcos. The channel is of sufficient depth for common size merchant ships, but is very narrow, and not to be entered without a pilot. Opposite to the town the water is shallow at the ebb.*

*"The island of Maranham forms the S.E. side of the Bay of St. Marcos, consequently this bay is to the westward of it. To the eastward of the island is the bay of St. Jozé. From some similarity between the Point of Itacolumi, by which vessels are in part guided, when about to enter the Bay of St. Marcos and another point of land upon the small island of St. Anna, which is at the entrance of the Bay of St. Jozé, instances have occurred of vessels mistaking the latter for the former, and entering the Bay of St. Jozé.† This error causes great danger and inconvenience; because, owing to the prevalence of easterly winds, it is next to impossible for a vessel to beat her way out of it. It is, therefore, necessary that she should go through the narrow channel, between the main land and the Island of Maranham, a passage of considerable difficulty.*

*"The Bay of St. Marcos is spotted with several beautiful islands. The width, from St. Luis to the opposite shore, is about four leagues. Its length is much greater; toward*

\* In or about 1818, therefore prior to the visit of M. Roussin.

† This will, in future, be obviated by the Lighthouses.—ED.



the South end there are several sandbanks, and the water is shallower. It receives here the waters of a river, along the banks of which are situated several cattle estates; but the river Itapicuru, which runs into the narrow channel between the main land and the island, enjoys the greatest share of cultivation; its banks are extremely fertile, and upon them have been established the principal plantations of cotton and rice, which are the two chief articles of commerce from Maranham. The island is, in itself, very little cultivated. There is no considerable plantation upon it. A few of the rich merchants residing in the city have country houses distant from it about one league, but the remainder of the lands are left untouched; owing, it is said, to the unfitness of the soil for the purposes of agriculture.

"The importance of the province has increased very rapidly. Previous to the last sixty years no cotton was exported; and I heard that, when the first parcel was about to be shipped, a petition was made by several of the inhabitants to the *Camara*, or municipality, requesting that the exportation might not be permitted: for, otherwise, they feared that there would be a want of the article for the consumption of the country; this, of course, was not attended to; and now the number of bags, exported annually, is more than 50,000, averaging about 180 pounds weight each. The quantity of rice grown there is likewise great; but the sugar which is required for the consumption of the province is brought from the ports to the southward. Some sugar cane has lately been planted, but hitherto molasses only have been made. I heard many persons say that the lands are not adapted to the growth of the sugar cane. The cotton and rice are brought to St. Luis in barks of about twenty-five or thirty tons burden. These come down the rivers, with the stream, from the plantations; their return is not, however, so easy, as they are obliged to be rowed or warped, but being then empty, or nearly so, the difficulty is not very great.

"Considerable quantities of manufactured goods have been sent out from Great Britain since the opening of the trade, as has been done to the other principal ports upon the coast; but a ready sale has not been found for them here to any great amount. The province of Maranham will not bear comparison with that of Pernambuco. It is still in an infant state; there still exist wild Indians, and the plantations upon the main land are in danger from their attacks. The proportion of free persons is much smaller; the slaves very much preponderate; but this class can, of necessity, use but little of what is in any degree expensive of what in such a climate is mere luxury. There exists at St. Luis a great inequality of ranks; the chief riches of the place are in the hands of a few men, who possess landed property to a great extent, numerous gangs of slaves, and there are also merchants. The wealth of these persons, and the characters of some of the individuals who enjoy it, have raised them to great weight and consequence; and, indeed, one governor knows, to his cost, that, without their concurrence, it was useless to attempt the introduction of the innovations proposed, and impossible to trample long upon the rest of the community. But the great inequality of rank bespeaks the advancement of this place to have been less rapid than that of other settlements farther South, where the society is more amalgamated, and property more divided. As a port of trade with Europe St. Luis may be accounted the fourth establishment upon the coast of Brasil in point of importance, giving precedence to Rio de Janeiro, Bahia, and Pernambuco."

The CITY of SAN LUIS DE MARANHAM\* is situated on the north-western extremity of the island of the same name, which is only separated from the main land by a narrow channel, called the Maranham River. Its population is estimated at 33,000, including a few English and French commercial houses. The city is divided into two parishes, and

\* The PROVINCE of MARANHAM is bounded on the West by Para, with the sea to the North, Piahy to the East, and Goyaz on the South. The River Maranham gives its name to this province. It was first entered by Pinzon in 1500; thirty years afterwards the country was erected into a captaincy; but the first settlement was made by Ravadiere, a Huguenot, who sailed from Bretagne in 1612. Several expeditions having been made to the country, which either failed or perished, Ravadiere and his companions erected a fort on the present site of Maranham, and built a warehouse and other houses. The French were expelled some years afterwards by the Portuguese; it was afterwards occupied by the Dutch. The early history of the province is a record of misfortunes, cruelties, and nearly at all times of the slave trade.

The borders of its numerous rivers are considered fruitful, and it has certainly prospered, when compared to many other parts. Indigenous fruits are abundant. Cotton and rice appear more attended to than any other products. Rice is said to be far better adapted to the soil than the sugar cane. The province is said to be rich in minerals. Fish of excellent quality is abundant. Sheep, cattle, and horses multiply fast. The Itapicuru is its largest river. It is rapid, but navigable in the middle parts by flat-bottomed barges, in the lower by small sailing vessels, and in the upper by canoes. Cotton and rice are the chief crops grown on its banks. It flows down in many parts through a fertile country.

contains thirteen churches and chapels, three monasteries, one *recolhimento of educandas*, and six hospitals, of which the Misericordia is the principal. It has a lyceum, a Latin school, two primary schools for boys, two for girls, four private schools, and an ecclesiastical seminary, in one of the monasteries. As a city, it ranks as the fourth in the empire.

Maranhã is said to be better built than any other city of Brazil. Mr. Kidder, in 1844, says:—"It exhibits a general neatness and an air of enterprize, which rarely appears in the other towns of the empire. There are, moreover, within its bounds, but few huts and indifferent houses. None of the churches appear unusually large or sumptuous, but many of the private dwellings are of a superior order. The style of construction is at once elegant and durable. The walls are massive, being composed of stone broken fine, and laid in cement. Although the town does not occupy a large extent of ground, yet the surface it covers is very unequal. Its site extends over two hills, and consequently a valley. The rise and descent in the streets are in many places very abrupt. Scarcely any carriages are in use, and, corresponding to this circumstance, there is only one good carriage road in the entire vicinity. That road leads a short distance out of town. The *cadeira* is but little known here as a means of conveyance. The *rede*, or hammock, is generally used as a means of easy locomotion. It is very common, both in Maranhã and Para, to see ladies in this manner taking their *passeio* or promenade. Gentlemen in health do not often make a public appearance in this style, although it is generally conceded that they are quite as fond of swinging in their hammocks at home."

The streets of Maranhã are laid out in straight lines; and, by the agency of wind and rain, they are kept clean. The pavements are composed of a conglomerate sandstone, the same that is used for buildings; but, as they have no gratings, nor even smooth stones for side walks, they are very tiresome and unpleasant to foot passengers. The town contains several ornamental squares, some of which are bordered with trees.

One of the most picturesque walks, within the precincts of the city, is to the public cemetery. The English have also a Protestant cemetery.

The town of ALCANTARA, or ALCANTRA, stands on the western bank of the bay of St. Marcos. It has been described by Mr. Koster, who proceeded to it in a sailing boat, from St. Luis. The beauties of the bay, Mr. Koster says, are to be seen only in crossing it. The number of islands diversify the view every five minutes. There is but little water on the bar of Alcantra, and as much pilotage is necessary as with a large ship in proceeding to St. Luis. The town stands on a semicircular hill, and at first sight from the port seems very pretty, but falls short of its promise on a nearer examination. Many of the houses are one story in height, and are built of stone; but the major part have a ground floor only. It extends back to some distance, in a straggling manner, with gardens, &c., and is an improving place; the lands in the neighbourhood being in request for cotton plantations. It has a stone quay, a town hall, a prison, and several churches.

Not far from the mouth of the Port of Alcantra is an island, about 3 miles long and one broad, called the *Ilha do Livramento*; it is inhabited by one man and one woman, (1816,) who have under their care a chapel dedicated to our *Lady of Deliverance*, which is visited by the inhabitants of the neighbouring shore once every year, for the purpose of celebrating, by festival, this invocation of the Virgin.

PIMENTEL says, "Whoever goes to the MARANHÃO, (or MARANHAM,) ought to make the coast during the months from December to July, because these are the winter rainy months, in which season the land appears clear and bright, and no high winds then prevail on the coast; but August, September, October, and November are the windy months, and the land during that season is constantly covered with a thick haze; and the higher the wind the more hazy it is. The winds, which are constant on this coast, are N.E., E.N.E., and East, which are all fair to go into and out of the harbour. On the coast, in general, you may anchor at two leagues from the land, but it should not be in less than 8 fathoms at high water."

MARANHAM, with its environs, have been copiously and happily described by Mr. Webster, in his interesting "Narrative of the Voyage of the *Chanticleer*," from which we take the following extracts.

The island on which the city stands is separated from the continent by an arm of the sea, and is about 28 miles long by fifteen broad. This city, notwithstanding its situation on an island, is the capital of a large province of the same name, and derives all its importance from the harbour, which is the principal one on that part of the coast.

The harbour possesses merit only by comparison with the few smaller ones on the coast. The

entrance to it is extremely narrow and shoal, so that vessels can enter it at high water only ; for, when the ebb has ceased, the shoals are so bare that a person might walk across the upper part of the harbour. It is snug and well protected, affording secure and commodious anchorage for several ships. The tides are rapid, rising 18 or 20 feet ; the anchorage is close to the town, where there is a very tolerable landing place. Strong winds seldom or rarely blow in so as to create any uneasiness among the shipping.

The harbour presents a cheerful scene, more particularly to a stranger, unaccustomed to the novelty he meets there. There is something enlivening in seeing the numerous coasting vessels skimming along the surface of the water ; the peculiarity of their rig, and the extraordinary thatched awning with which they are partly covered, their sails being of the lightest material, and fit only for the fine weather and light breezes which prevail on the coast.

The business of these vessels is to transport cotton from one part of the coast to another. Whole fleets of fishing boats are seen cruising about, some going out to their fishing ground and others returning, the arrival of the latter being announced by the sounding of horns which may be heard far and near ; and, in the midst of these, the attention is continually excited by the incessant crossing and recrossing of canoes manned by African negroes. Some of these canoes are large, and have crews of 12 or 14 persons, who use their paddles with great dexterity, and all the energy peculiar to the negro.

The country about Maranhão is by no means attractive. It is without any peculiar features, rather pleasing, here and there picturesque, fertile, and well wooded ; and when the distant hills and neighbouring heights of the main land are seen skirting the horizon of the bay, the effect is rather pretty. The banks of the river are adorned with a few country seats, the residences of wealthy proprietors.

The city itself is seated on the eastern shore of the harbour, upon a jutting promontory or neck of land, and is nearly surrounded by water. It occupies the highest ground in the neighbourhood, and is 90 feet above high water mark, being about a mile in length, and half a mile in breadth, and is irregularly built. The exterior of the city has but mean pretensions, and the most respectable parts of the interior are very little better. The streets are narrow, many of them of a low mean appearance, and without a handsome one among them.

There is nothing in Maranhão that particularly attracts the notice of a stranger, unless it be the cocoanut tree, gracefully waving its lofty plume above the houses, and imparting a tropical character to the place.

Near the water side is the market place for the sale of fruit, vegetables, and poultry, with shambles distinct from all. Beef and pork are the only meats to be had there, and these of a very indifferent quality ; but the town is generally well supplied with country produce, which is both reasonable and good. Besides the principal market place there are several other smaller ones in different parts of the town. The bread is excellent, the poultry good, the fruits and vegetables abundant, wines and groceries of a good quality, especially Port wine. The town is in no want of water, wells are attached to most of the houses ; but the water in some parts is said to be rather brackish, so that which is used for drinking is brought by the boats from some miles distant and distributed for sale. The mangrove is the usual firewood burned here.

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## SAILING DIRECTIONS FOR MARANHÃO.

Our actual knowledge of the approaches and the details of the navigation near Maranhão have been comparatively imperfect, inasmuch as a considerable period had elapsed since Captain Hewett surveyed the immediate neighbourhood of the city, and the changes, which necessarily occur in many minor particulars of the banks and channels, rendered our instructions somewhat incomplete.

We are now, however, enabled to give complete and recent instructions for the coast between this and Para, as the French government have surveyed and published a series of charts of the whole of those coasts left untouched by Admiral Roussin.

The first officer who endeavoured to improve our knowledge of this coast was *M. Ch. Philippe de Kerhallet*, Lieut. on board *L'Adonis*, between 1837 and 1840, and whose directions were published in 1841. But the principal, published in 1846, are those of *Capt. L. Turdy de Montravel*, of *La Bouchonnaise*, employed on the survey in 1842 and 1843. From the works of these officers we have corrected our former descriptions, and extracted from them what was necessary to complete the instructions.



We shall first give the directions by Admiral Roussin, and then, though at the risk of repetition, those of M. de Montravel.

### *Directions for Maranh, by Admiral Roussin, 1827.*

The winds in the environs are mostly from the eastern quarter. It is, therefore, to the eastward that the coast is made, whether arriving from Europe, Guayana, or the West Indies. The only exception is with wind at times between the North and the West. At all other times you gain a sight of the *Lançoes Grandes*, described on page 61. This shore of white sand may be seen to commence about twenty leagues E. by S. from the Isle of St. Anna, and extends, as we have shown, to the verdant coast of Mangrove, which terminates in a great elbow of land, under the meridian of  $43^{\circ} 28' W.$ \*

Off the coast, at 4 or 5 miles from the Great Lançoes, are from 5 to 6 fathoms of water, but, by an error in longitude, very presumable hereabout, you may easily mistake the *Smaller* for the Greater Lançoes; but observe that, when off the latter, you will have the shoal grounds of the River Penguicas to the East, in place of being to the West while off the former. In order to avoid all uncertainty in this respect hold off to 10 or 12 miles from the coast, and continue your course from 6 to 10 fathoms. At this distance from land you will be between the parallels of  $2^{\circ} 15'$  and  $2^{\circ} 30' S.$ , on a mean direction of W.N.W., which is that of the coast.

Having reached the meridian of  $43^{\circ} 20'$ , which is that of the middle of the beach of *Mangues Vertes*, and at 7 or 8 miles from shore, you must shape a course northward, in order to avoid the Cæsar's Reef and St. Anne's Breakers, which exist as described in page 62.

Mark well that, in this traverse, the tide will require attention, and a due allowance for it must be according to its direction and strength. The flood, on this part of the coast, as already noticed, sets to the S.W. and the ebb to the N.E., sometimes with a velocity of two miles in an hour.

There is considerable resemblance in the Isle of Santa Anna to the beach of *Mangues Vertes*, but it is more elevated. It ought not to be mistaken for it, as they are separated by a large open space, whereas the coast is altogether interrupted.

Having passed the breakers to the North of the Isle of St. Anna, which may be known by the lighthouse, continue to steer to the West several degrees North, until you come in sight of the breakers of the *Coroa Grande*, which may be approached to the distance of two miles.

You may, perhaps, recognise the breakers of the *Coroa Grande* by the quality of the bottom, of fine sand with black and reddish specks, which soundings become very frequent when you arrive on their meridian; but we repeat, that if the land has been made as we have advised, there cannot be the least doubt as to the position of the vessel, when you see the *Coroa Grande*; if you have made the Lançoes Grandes throughout their extent, you will have run along a space of thirty leagues perfectly determined.

From the North point of the *Coroa Grande* two routes present themselves for entering the bay of San Marcos, and afterwards the anchorage of San Luiz.

The first is by rounding, by the North and West, the *Coroa Grande*, by means of the lead; the depth in doing so ought never to be less than 9 to 11 fathoms, while you follow the edge of the bank, and then running along the western shore of Maranh, of which you may see the North part at the same time that you do the breakers, if the weather is clear. Independently of the greater height of its coasts, the island of Maranh is

\* BLAESDALE'S CORAL REEF.—It is particularly to be observed by those who are making for the S.W., when approaching the Equator, that, near the longitude of  $41^{\circ}$ , lies a dangerous reef, the existence of which is indisputable, though the exact longitude is not known.

On the 15th of October, 1819, the brig *Richard*, of Ulverston, Captain Blaesdale, struck on this reef, in about  $0^{\circ} 56'$  or  $0^{\circ} 57'$  North of the Equator, and longitude, by account, beyond  $41^{\circ} W.$  The following is an abstract of the *Richard's* log:—"Friday, 15th of October, 1819; fine moderate weather; ship going three knots; at 6 p.m. grounded; did not remain fast above ten minutes. Water smooth; saw no breakers. In a few minutes after sounded, but got no bottom with 125 fathoms of line. Latitude at noon, by good observation,  $0^{\circ} 57' N.$  Run West until 6 p.m. Long.  $41^{\circ} 22' W.$  The vessel drew eleven feet of water; in one hour there were 18 inches of water in the well. When the ship arrived at Para, whither she was bound, three holes were found, each about the size of a man's hat, and nearly through her bottom, and several large pieces of white coral were sticking in different parts."

distinguished from that of Santa Anna, in coming from sea, by the white cliffs on its northern part.

The first point of Maranham, which will be seen to the southward, on passing the banks of Coroa Grande, is that of *San Marcos*, or *St. Mark*, which gives its name to the Bay. It is a high bluff point, and on its height is a guardhouse and signal staff. A broad shelf extends from and to the S.W. of the point, along the coast, with flats of rock and sand to more than 700 fathoms from the shore, which must, therefore, be approached with caution.

On continuing the route to the S.W. and S.W.  $\frac{1}{4}$  S., you will make the parallel of the little fort *Sant-Antonio de la Barra*, situate on the point *das Areias* or *Areas*, which is the North point of the entrance of the harbour of St. Luis. Here ends the flat of rocks and sand above noticed, and to the point you should not approach nearer than half a mile, at which distance may be found from 35 to 40 feet of water, where you may anchor.

The best and most frequented route to *St. Luis* is taken by gaining a sight of the *Morro Itacolumi*, before mentioned, a small mountain of the continent, upon the western coast of the Bay of St. Mark, nearly on the parallel of the North part of the Coroa Grande; this mountain resembles in shape a pointed cap with very broad sides; it is entirely covered with bushy trees, and may perhaps be seen at 5 leagues off, in clear weather. By this insulated hill the coast may be readily known: the land to the North of it suddenly taking a western direction, and to the southward are red cliffs, trending S.S.E. There is no similar mark in the vicinity; and it is, therefore, noted both on arrival and as a point of departure.

The LIGHTHOUSE is a quadrangular building, erected on the cliff of Mount Itacolumi, the sides of which face the cardinal points, and is 75 feet high from the base, and 147 feet above high water mark. It shows a revolving light of two distinct colours, one being of the natural appearance, the other of a red colour, these lights being alternately visible and invisible for about two minutes in each revolution. It was first lighted on January 1st, 1839.

On approaching Mount Itacolumi, it appears in the shape of a gunner's quoin, and is remarkable only from the low land in the vicinity. From the lighthouse on St. Anna's Island it bears W.  $\frac{3}{4}$  N. nearly 15 leagues. When this mount is descried shape a course to bring it to bear W.N.W., and according to judgment, about 4 leagues distant.\*

When you are within 6 miles to the East of this lighthouse, and about to enter the bay of St. Marcos, the route is due South, 15 miles, that is to say, to the parallel of, and a league to the East of Point Tatinga. From this position you can steer S.S.E. directly for the point of San Marcos; but you must not steer this direct course while the ebb tide or high water lasts, in order to avoid being driven by the flood on to the north-east point of the Bank da Cerca, on which there is but little depth at low water. It will be better then to steer four miles to the S.E. from 3 miles E. from Point Tatinga. This route will carry you nearly two miles to the N.E.  $\frac{3}{4}$  N. from Point San Marcos. From this last position run along the coast of Maranham, at 700 or 800 yards distance, in 9, 12, and 8 fathoms, to the anchorage, as directed in the first route.

In all the extent of this passage, from the parallel of Itacolumi, the only attention required (besides sounding continually, as indeed ought always to be done while near shoals or the land) is to keep, until you are on the parallel of Point Tatinga, to the West of the North point of the only danger, which is called by some here, the Middle Bank (Bank do Meio);† and to do this it will be sufficient to keep 4 or 5 miles from the coast of the continent, as you run along it to Point Tatinga. After having advanced thus far toward the entrance, and having crossed the bay to find the Point San Marcos, you will have a good mark to assure yourself that you are to the East of the Bank da Cerca, and at a sufficient distance from the bank and from the coast of Maranham; it is to steer so as to keep a small space open between the two small islets (Espera Isles) lying to the Isle do Medo.

*St. Mark's Point*, having on it a square tower, cannot be mistaken. On approaching the point, a sandbank, dry in many parts, will be seen at about two miles N.N.E. of it; the *Banca da Cerca*, or *Acercas Bank*, to the westward, will also be seen, breaking in many places. Between these is the channel to St. Luis' Roads. On passing St. Marcos' Point the rocks will be seen to the westward of it; but, by giving them a sufficient berth, and

\* From this spot *Ponta Tatinga* or *Alcantra Point* will be open of Point Piraremo, and bear S.W. by S. Here anchor, if the night is far advanced, or the weather thick.

† This bank was not examined by Admiral Roussin, but is fully shown by Captain Hewett, in our chart of this coast. It was surveyed by Captain de Montravel of the French marine, as shown hereafter.

bringing the body of the *Isle do Medo* to bear S.W., and the fort on *Ponto das Areias* S.E., you anchor in 15 fathoms, sand and mud. On the foul ground off St. Mark's Point many anchors have been lost.

The best anchorage before the mouth of the harbour is at 600 fathoms to a mile from Fort St. Antonio, or *Ponta das Areias*, with the fort bearing S.E. by E.  $\frac{3}{4}$  E. In this position there are from 30 to 45 feet of water, at low ebbs. Small vessels go higher up, toward the bank of the *Isle do Medo*.\*

The anchorage before St. Luis is bounded, on the South and South-west, by the *Ponta da Guia*, appertaining to Maranh, by the *Isle Medo*, and several shoals, on which there is little water at low tides; to the East and the N.E. by the coast of Maranh; to the S.E. by the banks which bound the South side of the entrance into the harbour; lastly, at about two miles to the N.W. by the *Bank da Cerca*, before mentioned, and which has, in some places, only 6 feet over it at low water.

Besides the passage on the N.E. of the bank, leading to the anchorage, there is another on the S.W., between it and the *Isle Medo*, but the latter is taken only with winds between North and South by the West; when they are easterly, it is obvious that, for attaining the roadstead, the passage by the Maranh coast is always preferable.

The entrance of the harbour of St. Luis is not difficult for small vessels, but those of greater draught cannot tack in the channel, unless the wind be favorable; and they must have a pilot.

The least depth found on the bar of St. Luis, in 1820, was 11 feet at the lowest ebbs, and nearly 27 feet at high water; but from a subsequent examination it appears that there is now less, and that the channel is growing up. The mud-bank on the South side of the channel is partly dry at half tide.

Those vessels whose draught will not allow them to enter the harbour of St. Luis, and which may require some repair, may find a tranquil anchorage in the little bay or cove of *Ataki*, to the S.W. of Maranh, having a bottom of mud or ooze, with 15 or 16 fathoms of water; the current less rapid than before St. Luis, and the sea always smooth. After doubling the *Isle Medo* on the West the distance to it is one or two miles.

### *Directions for Maranh, by Captain L. Tardy de Montravel, of the French Marine, 1847.*

The Bay of San José, though filled with shoals, offers, nevertheless, a channel between the island of Santa Anna and the continent, which leads to the anchorage of San Luis, going round the South side of the isle of Maranh. But this channel is of most difficult navigation, and is very seldom taken by any vessels, and then only because, by entering the Bay of San José by mistake, or driven there by the force of the currents, they are obliged to continue so dangerous a route. As the flood tide runs rapidly to the S.W., to the mouth of the bay, it is prudent, on leaving the beach of *Mangues Verdes* in order to pass well to the North of the breakers of Santa Anna, to avoid their influence, to go further northward in the track. The banks of Santa Anna, being very steep, they can always be passed safely at a short distance, taking care to avoid the effects of the flood tide, which is estimated here to run  $2\frac{1}{2}$  and 3 miles an hour. If there should be a slight breeze, and you pass too close to the reefs, you may be driven on them, or else in to the W. part of the bay of San José, and find yourself in a very critical situation.

*Coroa Grande*.—Supposing, then, that you pass 3 miles to the N. of these banks, when on the meridian of the lighthouse, you will steer W.  $\frac{1}{2}$  N. to pass some miles to the North of the extreme point of the Great Bank of *Coroa Grande*, which extends  $12\frac{1}{2}$  miles northward of the N. point of the island of Maranh. This bank is formed of several flats, of which the three principal generally, but do not always, break. The corvette *La Bergère*, which anchored for two days on this bank, observed that it always broke while the ebb lasted, and that the three principal groups did not show during the second half of the flood. It has been said that there are some channels across the *Coroa Grande*, and

\* Captain Wellesley has noted two spots for anchorage; the first in 16 fathoms, with the fort S.E., and that of St. Mark E.N.E.; the second with Fort St. Antonio E.  $\frac{1}{4}$  S. and Fort St. Mark N.E. by E. These marks show the extremities of the good ground; the second station is recommended as the best. The *Sapphire* never lost an anchor; while vessels near her commonly did.



between it and the coast of Maranham, but the navigation of *La Bergère* proves positively that they are scarcely navigable.

When, after having left the meridian of Santa Anna, you have run 26 miles on the track I have mentioned, (in which route the force of the currents ought to be taken into account, the mean rate of which may be taken as  $2\frac{1}{2}$  miles, the flood running S.  $56^{\circ}$  W., and the ebb N.E.) you will be through the northern groups of the Coroa Grande, the breakers on which will have been seen if the state of the sea allows it.

*Morro Itacolumi.*—You will then steer W. and make the Morro Itacolumi, (described on p. 69). On this point is the lighthouse, which was much required, but, as the ground on the Morro was not sufficiently firm for such an erection, it was, therefore, built on the cliff itself 1090 yards, E.  $\frac{3}{4}$  S. from the Morro. The light, revolving, alternately red and white. I have often heard complaints from captains of the careless way in which the lights on Itacolumi and Santa Anna were managed; but, as for myself, during the time that I was employed in sounding the bay of San Marcos, I did not observe any neglect in this important service: it is as well, however, to be on your guard.

In fine weather the Morro Itacolumi may be seen 18 or 20 miles off, like a small conical islet on the horizon, and will continue so, between E. and W., to the distance of nearly 10 miles.

*Point Tatinga.*—Then steer S. by E. so as to bring Point Tatinga, the extreme land in sight to the S.W., to bear S.W.  $\frac{1}{2}$  S. With this bearing on, run S.S.W., so as to bring the same Point Tatinga to bear S.W. by W., and then run for Fort San Marcos, which you will see on the horizon like a small hill, bearing S.  $\frac{1}{2}$  W.

*Coroa Peixada.*—In the route we have described you will have constantly had a depth of 15 to 18 fathoms, except in one part, about 13 miles W. of the Morro Itacolumi, where there is a bank, on which  $3\frac{3}{4}$  and  $4\frac{1}{2}$  fathoms will be found, known to the pilots by the name of the *Baxo* or *Coroa de Peixada* (Fishing Bank). It extends about 2 miles N.E. and S.W., with regular declivity, though the E. and W. sides are steep. It offers no danger to a vessel drawing less than 16 feet, but will be a good means of ascertaining your position, on the parallel of Itacolumi. Having made this bank, and proceeding southward, you will bring Point Tatinga to bear S.W.  $\frac{1}{4}$  S.

*Coroa das Almas, Bank do Meio.*—In following the previous route you will have left to starboard the *Coroa das Almas*, and the great flat of unequal depth which runs off the shore, and which, bearing to the South to Point Pirarema, follows in an irregular curve the N.N.W. direction of the land as far as the parallel of Itacolumi. To the left hand you will have passed along the Bank do Meio, mentioned by Admiral Roussin on page 70, which lies in the middle of the Bay of San Marcos, and is 6 miles in length, S.S.W. to N.N.E., with a mean breadth of half a mile.

It chiefly consists of fine grey sand, very light, and marked with black specks, into which the anchors penetrate deeply. When at the South extreme of the Bank do Meio Point Tatinga will be on with the centre of the isle Livramento, bearing W. by S.  $\frac{3}{4}$  S., Fort San Marcos S.S.W.  $\frac{1}{4}$  W., and the white patch of Pirarema W.  $\frac{1}{2}$  N. From the extreme North end Point Tatinga will bear S.W. by W.; Point Pirarema W.S.W.; and Itacolumi N.W. by W.  $\frac{3}{4}$  W., but from this point it will not be possible to see the land distinctly, unless the weather is very favourable.

The soundings vary on this bank from 13 feet to 6 fathoms at low water; its western side is steep-to, so that the lead affords no indication of your approach, and, at the same time, the great distance of the land renders this still more uncertain. The Coroa das Almas, which forms the other side of the channel, has the same difficulty in distinguishing by the lead.

The only directions that can be given for avoiding both these banks is to keep the highest part of Point Pirarema within the angle between the bearings of S.W.  $\frac{3}{4}$  S. and S.W. by W. For its south-western extreme you will go clear of it by keeping between the coast and the Morro of San Marcos on the bearing of S.S.W.

*Bayadère Passage.*—Having well recognised the breakers of the Coroa Grande, and you wish to run to the anchorage of San Luis de Maranham, passing on the eastern side of the Bank do Meio, you must follow the directions given by Admiral Roussin, see p. 70 previously.

*Outer anchorage.*—When, by either of these routes, you have come within 2 miles to the N. of Fort San Marcos, you should wait for a pilot if you wish to enter the port of

San Luis. If you mean to anchor outside you must steer on the middle of the *Boqueirão*, a channel formed by the Isle do Medo and the islet Espera, and you must anchor when you bring the Fort San Antonio, which is raised at the entrance of the port on a sandy point called Ponta das Areias, to bear S.E. by E.  $\frac{3}{4}$  E.

By keeping the Boqueirão open you may be certain that you are to the eastward of the Bank da Cerca.

*Interior Anchorage.*—I would not advise any captain who has not been frequently in this port to bring in his vessel without having previously taken a pilot at the bar. If, nevertheless, it is indispensable that he should enter at once, these are the directions to follow;—At low water the banks are sufficiently uncovered to show the passage perfectly; but it is not so at high water. You must then steer so as to pass a short distance from Ponta das Areias. When you have opened Point San Francisco, and the eastern angle of the barracks, nearly a sail's breadth, bear round quickly to port, and then run on so as to pass at a cable's length or more to the South of Fort San Antonio, whence you may bear up for the city, keeping to the windward side. It would be as well, when you are abreast of Point San Francisco, to bear off a little so as to avoid a point which projects from it under water.

*Point das Areias and Bank da Minerva.*—The only two points to dread are these, which form the South point of the entrance of the port; to ground on either of them is dangerous, for the sea sometimes breaks on them very heavily, but all over the port, to run aground only occasions loss of time and trouble.

The anchorage before Fort San Antonio is the most commodious on account of its proximity to the port, but the sea is frequently heavy in the season of strong breezes; and the bottom being of madrepore, covered with a bed of sand, the loss of anchors is also to be guarded against.

*Anchorage to the South of the Isle do Medo.*—The anchorage which is best adapted for vessels with a large draught of water, and which have to make some stay at Maranham, is that to the South of the Isle do Medo. There will be found at that part a depth of 11 fathoms, with a bottom of sand and mud, and always sheltered from the sea. It is still better at the back of Point Ataki, but that to the South of the Isle do Medo has every security, and at the same time has the advantage of being nearer the port.

The track to this anchorage is to steer so as to pass to the West of the Bank da Cerca, and to go round the Isle do Medo to westward, so as to come to the anchorage on the South. A glance at the plan will show better than any directions how readily this anchorage is arrived at.

*TIDES.*—The tides are regular in the port of Maranham, and throughout the bay. The directions of the currents vary a little in different parts; at the anchorage of *La Bayadère* the flood runs S.S.W., and the ebb N.N.E. South of the Bank do Meio they run, the one to the S.W., and the other to N.E. The maximum rate  $1\frac{1}{2}$  mile in ordinary tides, and  $2\frac{1}{2}$  at spring tides. The rise and fall is 11 feet in ordinary, and 17 ft. 9 in. at spring tides, according to the Pilote de Brésil, at the entrance of the port. At the customhouse quay, within the port, we have found the ordinary rise and fall 10 ft. 9 in. and 16 ft. 5 in. at spring tides. The time of high water, (establishment of the port), is 7 hours. The position of the W. bastion of the sea battery is lat.  $2^{\circ} 31' 45''$  S., long.  $44^{\circ} 15' 44''$  W. The variation of the compass, observed at Point San Francisco, on the 9th of March, 1845, was found to be  $9^{\circ} 28'$  W. In January, 1820, at Fort San Antonio it was  $1^{\circ} 37'$  E.

*Directions for leaving the Bay of Maranham.*—Supposing a large ship wishes to leave the Bay of San Marcos, and she is moored before the entrance of the port with the wind from between E.N.E. and E.S.E. She will get under way at high water, and steer W.N.W., to pass to the S. of the Bank da Cerca, which will be passed when the little islet to the N.E. of the Isle do Medo lies to the East of the easternmost of the two Espera Isles. The lead will be a sufficient guide. Then bear up as close as possible to the wind, and run on until you are about 2 miles from the shore of the continent.

So long as you are to the South of the white patch of Pirarema bearing W.  $\frac{1}{4}$  N., you may tack from one side of the bay to the other without fear of the Bank do Meio; but, when to the North of this bearing, you must keep within the following limits:—to avoid the Bank do Meio, you must, while to the South of the high lands of Point Pirarema, keep to the West of the bearing of Fort San Marcos to the S.S.W.  $\frac{1}{4}$  W., and when you have passed to the North of the parallel of the same high lands of Pirarema, you must

keep to the West of the bearing of Point Tatinga at S.W. by W. The Coroa das Almas and the Bank of Pirajuba are cleared by keeping eastward of the line of Point Tatinga on with Point Raymondo, bearing S.W.  $\frac{1}{4}$  S. These banks being too steep for the lead to give any indication on approaching them, it will be prudent to keep within the above bearings.

Leaving the port at high water thus, a vessel, though of large draught, can keep on the larboard tack without fearing the Bank da Cerca, on which there will be a depth of 20 feet at high water. A small vessel, also, at any hour of the tide, need take no notice of Bank do Meio, as there is never less than 13 feet on it at low water; and from thence you may tack from one side of the bay to the other, that is to say, from the Banks of Coroa Grande to those of das Almas; but, as the ebb will be stronger on the western side of the bay, it will be better to tack in that part of it. It is for this latter reason that the pilots prefer the western passage for large ships on leaving to the eastern, in which, nevertheless, the lead is a better guide than in the first.

I would advise a vessel, which, leaving too late, or hindered by any cause, cannot get out in a single tide, to take the eastern channel in preference, in order to choose an anchorage at the end of the ebb tide. The sea there is quieter, and the bottom better than in the western channel.

A vessel which has but a short time to stay in the Bay of San Marcos will do well to stop at the anchorage called, by those who frequent the bay, the *Road das Alagoas*, to the N.E. of Fort San Marcos; there will be found an excellent bottom in 10 and 11 fathoms water, and the sea quiet.

A vessel brought to the parallel of the Morro Itacolumi is considered as being out of the bay, and is then left by the pilot.

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### *Directions generally for proceeding to Maranhã, &c. By Captain the Hon. Wm. Wellesley.*

The best landfall for vessels from sea is the *Lançoes Grandes*, between longitude  $42^{\circ} 45'$  and  $43^{\circ} 12'$ , the whiteness of which, already described, is remarkable. Crossing the Equator in longitude  $40^{\circ} 40'$ , the true course to this coast (not allowing for current) will be S.W. Run boldly to the western extremity, and you will thence make the green or verdant land about *Mangues Point*, with the lighthouse on St. Anna's Island, &c.

In proceeding for Maranhã it may be supposed that the land is made in the morning about the *Lançoes Grandes*. You will be running down to near the land, probably on a S. by W. course. Having seen it clearly, haul off to W.N.W., and, having arrived at their termination, you will run about 10 or 15 miles along the coast, nearly quite green, the "*Mangues Verdes*." From the masthead St. Anna's lighthouse will be in sight as you run along, bearing, perhaps, about S.W. by S. It will be seen before the island on which it stands, and makes like a vessel under sail. You are not sure of making the island itself, until *Mangues Verdes*, or Green Mangrove Point, bears S. by W.; and it is essential to bear in mind that the lighthouse is not on the northern extremity of the island. The dangerous shoals which run in a N.E. direction off it will now be made out: and, if you think the flood is setting you in, haul off in time to N.W. by W.

Having brought the reefs of St. Anna's Island abaft the beam, a W.  $\frac{1}{3}$  N. course may be steered with safety until the "*Coroã Grande*" breakers are passed. A N.W. by W. course has been recommended, but the *Sapphire* steered W.  $\frac{1}{2}$  N. on the flood, in perfect safety, making the two breakers; but steering the same course upon the ebb she was obliged to keep away W.S.W. to make them.

The *Coroã Grande Shoals* always break, and Captain Wellesley says, "I think it better to make them, because you get a fresh departure, which is advantageous if night be coming on, and you wish to anchor. If you do not wish to make them, W.N.W. may be steered for 15 or 20 miles, and then West, until Itacolumi is seen ahead. This mountain is the highest land on the coast, and makes at first like a small round island. Almost immediately afterward the adjacent land appears, and then it takes something of the shape of the quoin of a gun. I think fifteen miles the very utmost distance at which this land can be seen, and it is likely that you will not be more than ten or twelve miles off when it is reported from the masthead. The less water you have the closer you will be to it.



If, in approaching, you should have as little as nine fathoms, or less, haul off to the South, and gradually keep away again to S.S.W., when you deepen the water, which course will take you up to *St. Mark's Fort*. If, on making it, there should be a depth of 14 fathoms, S.S.W. may be steered at once. In running up this course bear in mind that the flood sets toward *Alcantara* and over the *Cerca Bank*, and the ebb, on the contrary, will check you over to the Middle Bank, and toward the edge of the *Coroã Grande*.

Now look out for *St. Mark's Point* ahead: it ought to bear from S. by W.  $\frac{1}{2}$  W. to S.W. by S., and should you be in the middle of the channel you will hardly gain soundings with the hand lead; should you have as little as 9 or 10, you will be upon the edge of the *Middle Bank*; and, as a precaution, should keep half a point or a point more to the westward; fourteen fathoms is a very good depth to run up in all the way, and you may anchor in that depth off *Fort St. Antonio*.

The land about *St. Mark's*, when first seen, makes like two small islands, the easternmost one having two sandhills upon it, which look like two roads. The round fort and flagstaff soon appear, for which keep the ship's head, and *Fort St. Antonio* will be seen like a long, low, red house, a little to the westward of *St. Mark's*. When you are within a mile of *St. Mark's Fort* run along the land until you bring the fort to bear N.E. by E., and *Fort St. Antonio* E.S.E., then drop your anchor in from 10 to 14 fathoms.

When near the anchorage, the only danger to be apprehended in a large ship is from the *Banca da Cerca*, which lies at about a league off shore, and the northern point of which lies nearly N.W. from *St. Mark's*. Unless there be a very strong tide running, or the ship is beating up, you do not come near this; if you should, however, the soundings decrease very gradually, and indicate its vicinity.

In beating out the pilot took the *Sapphire* out over its North end, in 5 fathoms; and at low water there may be over its centre as little as 16 feet. A mark for clearing it is not to shut in with *Point Ataki* the two small isles [*Espera*] which lie off it. But, in common cases, the bank does not lie within the track.

It seldom happens that vessels have to beat from *Itacolumi* to *Maranhã*, the wind being almost constantly to the eastward; but they usually have to beat out. One tide ought to bring the Mount to bear from W.N.W. to West, when the pilot leaves.

They go about in from 9 to 12 fathoms on either side. The *Sapphire* was twice in 6 fathoms, off the *Carnaveros* or *Pirajuba* Banks, which were found to extend farther out than as laid down. The Baron Roussin's soundings are correct, but, perhaps, in certain places, he gives rather too much water. His details of the coast, such as the entrance to rivers and other minutæ, are partially erroneous;\* but it is to be recollected that his was a survey made under sail.

The eastern Channel has latterly grown up, and is now disused by all excepting small coasters. Having once sighted *Itacolumi* it would be difficult to get a vessel into the eastern Channel, so much more simple and direct is that on the West.

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*Remarks and Instructions for Maranhã, &c., by Lieut. E. Stopford,  
Commander of H.M. Schooner Pickle, 1832.*

The preceding description and remarks, by the Honourable Captain Wellesley, have been amplified and confirmed by those which follow, from the pen of *Lieut. Stopford*.

Vessels bound to *Maranhã* may cross the Equator in longitude  $40^{\circ}$  W., which will enable them to fetch the *Lançoes Grandes*, a landfall deservedly recommended by Baron Roussin. It has been customary to make the lighthouse on the Island of *Santa Anna*, but an error in the longitude will be of less importance in making the *Lançoes Grandes*.

A vessel arriving off *Santa Anna*, and not having sufficient daylight for finding her way into the Bay of *St. Mark*, may lie-to for the night, off and on the lighthouse, keeping it as

\* By the recent surveys and observations of Captain T. de Montravel and other officers of the French marine, this has been obviated in our charts and directions, as will be seen in the preceding pages, and also in the subsequent directions for this coast. ED.

near South of her as possible, distant 6 or 7 miles. The light may be seen about 15 miles off, but, being badly kept, is not to be depended on.

As there is constantly a heavy swell on the coast anchorage should be avoided, if possible, as recovering the anchor is both difficult and dangerous.

Having passed St. Anna's Island, if a vessel steers W.  $\frac{1}{2}$  N. she will pass the breakers of Coroa Grande at the distance of about three miles, and Itacolumi will be descried, bearing about West. When distant about 10 or 11 miles from this hill, change your course to S.  $\frac{1}{2}$  W., till the fort and flagstaff of St. Mark are made out nearly ahead.

*St. Mark's Point* should not be passed at a greater distance than a mile and a half, and so that the Cerca Bank, on the starboard hand, may be avoided. A reef of rocks extend from the point, and in order to avoid these it should not be approached within three-quarters of a mile. Within these limits a vessel may coast along until Fort Antonio bears East or E. by S., when she should anchor, and wait for a pilot.

By following the route to Maranh, above prescribed, a vessel will avoid getting entangled among the swashways of the shoals of the Coroa Grande, which are very dangerous.

The inhabitants of Maranh, in consequence of their harbours filling up, expect to be obliged to transfer their port of shipment to Alcantara. Lieut. Stopford, who visited this place, is of opinion that it is preferable, in every respect, to Maranh, being easier of access, capable of containing more ships, and allowing them to get in or out at any time of the tide, with the prevailing winds. The depth of water is also greater. H.M. schooner *Pickle* was anchored at about one-third of a cable's length from the shore, in 7 fathoms, at low water, being more than in any part of the harbour of Maranh, even at high water.

### *General Remarks on quitting Maranh, and returning toward Europe.*

It has been already noticed that, on the northern coast of Brasil, in general, there is no difficulty in proceeding along it with the prevailing winds. During five-sixths of the year these winds blow from E.S.E. to E.N.E., and it is easy to proceed to the North, and even to gain a little to the East, by governing the starboard tacks.

*In quitting the port of Maranh, and proceeding thence northward, a favourable wind is required, and care must be taken in order to avoid the dangerous shoal of Manoel Luis, described hereafter, and which lies as now represented on the chart. The combination of tide and current hereabout renders it necessary to be very circumspect when leaving the bay, or in sailing between it and the shoal of Manoel Luis, as the streams may be very variable.*

In supposing the winds to be to the East, N.E., to S.S.E., which are the most frequent, you must take the starboard tack on quitting the roads, and then endeavour to steer so as to make good the route of N.  $\frac{1}{2}$  W.

It is requisite to get under weigh at the precise moment of high water; so that the first stretch or tack may carry you clear of the *Cerca Bank*, an approach to which may be known by a sudden change of depth, from 15 or 16 fathoms to 8 and even 5 fathoms, in the interval of time required for heaving out and drawing in the lead.

The *Cerca Bank*, situate in a N.E. and S.W. direction, is narrow. When on the northern extremity, in 9 feet at low water, the eastern side of the northern islet *Espera* appears in a line with Point Ataki, and the Point of St. Mark S. 56° E.

Beyond this, the first tack toward the West may continue, according to the wind and the tide; the ebb being still favourable. The latter sets, as already noticed, to the North and N.N.E. in all the extent of the bay, and one ebb may suffice for carrying the vessel out, provided it be taken, as recommended above, from the moment of high water.

Small vessels may approach the coast, on the West, to the distance of two or three miles, but it is not prudent to advance so near in a larger vessel, or in less than 12 fathoms.

Having completed the tack to the depth prescribed, and hauled to the eastward, the depths will be found to increase, and it is probable that the second tack to the North will accomplish the passage outward; but, should it be otherwise, you continue to tack while the ebb continues; never lessening the depth under 12 fathoms, and taking every precaution

not to approach too near the *Middle Bank*, which is steep-to. The velocity of the stream will be found proportionate to the depths; and the middle of the channel being deeper than the sides, it is, consequently, in mid-channel that the tide is most favourable.

Should the winds blow from the S.E. or S.W. quarters, at the moment of departure, with an appearance of duration, the most convenient route will be made along the Maranh side and the bank of *Coronha Grande*; but the channel to the eastward of the *Middle Bank* requires caution. The leading mark to clear the eastern side of this bank is the tower of *St. Marcos S.S.W.  $\frac{1}{2}$  W.*, until the *Morro* or mount *Itacolumi* bears N.W. by W.  $\frac{1}{4}$  W., where you will be clear of its North end, and may proceed according to circumstances.

The pilot employed in conducting vessels outward is generally discharged at two or three leagues to the eastward of mount *Itacolumi*.\*

The only obstacle now to be feared and avoided, on the route to the northward, is the shoal of *Manoel Luis*, of which a description is subjoined.

**SHOAL of MANOEL LUIS.**—This dangerous shoal, which lies in the *true* direction of N. 8° E., 77 miles from the Point of *Itacolumi*, was first explored by M. Roussin, who ascertained its position in 1820. It was previously known only by the number of wrecks which it had occasioned, and M. Roussin found it to consist in several groups of conical rocks even with the water, and separated by intervals unequal both in distance and in depth. Situate in a sea rarely exposed to violent winds, this reef breaks only in short intervals and at low water. It is, therefore, almost impossible to see it, unless when passing very near. Nevertheless, several rocks of the flat have over them not more than from 5 to 15 feet of water, with 8, 10, and 12 fathoms at their base.

The breakers, which rise instantaneously, have the appearance of the spouting of a whale, while the sea is smooth about them; and, when they cease, they leave masses of white foam, which continue for some time. When the sky is serene the rocks may be seen under water, appearing like great black patches; but these are not visible until too near to be prudent for a vessel to advance to them. After two hours' flood, and only at half a mile off, with the sea smooth, no trace of them will be seen.

M. Roussin examined the shoal on the East, the South, and the West: and he pronounces that there can be no other danger hereabout, in these directions; but circumstances did not allow him to complete an examination from the North.

M. Roussin's observations, at 400 toises to the South of the westernmost rocks, gave for the latitude 0° 51' 25" S., and longitude 44° 14' 35" W. Variation, 0° 57' E.

The reef, which lies 0° 1' 30" East of *St. Luis* of Maranh, is more than half a mile across from North to South, and about three miles in an E. by S. and W. by N. direction. Should a vessel strike upon it she would, most probably, go down immediately; as was the case with the *Venus*, of Liverpool, on the 21st of May, 1814, which ship unfortunately experienced this misfortune, and disappeared in about 12 minutes: the utmost precaution, therefore, is necessary, in order to avoid this danger.

By anchoring for thirty hours, near the edge of the shoal, it was found that the tide set regularly six hours each day, the flood to the S.W., and ebb to the N.E., nearly with the same strength, six-tenths of a mile per hour. High water, on full and change, at 5 h. The rise and fall was 12 feet. These remarks have been confirmed by others made by *Lieut. Lartigue*, in a vessel called the *Lyonnaise*, in 1826, who found the alternate streams to run at the rate of nearly a mile in the hour.

The shoal of *Manoel Luis* was again examined on the 8th of December, 1828, by Capt. Geo. Cheveley, during a fine steady breeze, nearly East, and clear weather. This gentleman has said, The appearance of the reef, on approaching, is only that of a heavy sea, or rollers, hardly breaking in calm weather, and consequently the more dangerous. It is very steep, rugged, and composed chiefly of detached coral rocks. The shoalest part appears

\* For a knowledge of the bank of soundings off the bay of Maranh the naval world is most especially indebted to a small but valuable chart, constructed by *Lieut. Geo. Crichton*, R.N., in 1813. Its contents, with a corrected longitude, appear on the chart which accompanies these directions, and render a more particular description superfluous. It may be seen that white sand, with black specks, is predominant all the way from below the parallel of *Itacolumi*, or 2° 15' S., to beyond that of *St. John's Island*, or 1° 6' S.

On the eastern part of the bank, upon coming from the eastward, the soundings are found more variable. Here are coarse sand, with bits of coral or pounded madrepores, broken shells, gravel, &c. all of which correspond with subsequent descriptions.



to have about 6 feet of water over it, the sea breaking, as it were, through gaps or little channels under water. The extent seemed to be about a mile and a half from East to West, and from half to three-quarters of a mile North and South. Latitude  $0^{\circ} 52' 10''$  S., long. by chronometer, (Jackson, of Liverpool,)  $44^{\circ} 12' 17''$ : by another, (Hornby, of Liverpool,)  $44^{\circ} 12' 40''$ ; lunars,  $40^{\circ} 12' 6''$ . The accordance of these results with those of M. Roussin leaves us no doubt as to situation of the shoal.

There is perhaps another shoal to add to the previous, lying 50 miles N.W. by N. from the vigia of which the position is given in the journal of Capt. *Le Huby*, of the brig *Les Jumeaux*, as follows:—I had left Maranh on Oct. 3rd, 1838, at 2 a.m., to proceed to Guadeloupe; the 1st of Nov., at  $7\frac{1}{2}$  h., the wind at East, slight breeze, fine weather, I perceived ahead a remarkable change in the water, which had become whitish or greenish, with a very short sea, which seemed to rise and break in the direction of our track, which was then N. by W. We were surrounded by these rollers, and large patches under the water made me think that I was over some shoal, and gave me some inquietude as to our position. At eight o'clock I sounded in 17 fathoms water, rocky bottom, continuing our route in the same direction, and under the same circumstances, the ship going two knots. I sounded at 9 in 19 fathoms, bottom of coral; at 10 o'clock I found similar bottom with 21 fathoms; at 11 I had 26 fathoms, same bottom; at 20 minutes after noon observed the latitude, the depth was 29 fathoms; at 10 o'clock I sounded without finding bottom at 85 fathoms, the sea had become quiet, and had attained its natural colour.

A good meridian altitude at noon gave lat.  $0^{\circ} 4' N$ . The longitude by a good chronometer was  $44^{\circ} 44'$ . It results from these observations that the shoal I had passed extends from lat.  $0^{\circ} 9' S$ . to  $0^{\circ} 4' N$ . in a S. by E. and N. by W. direction. From my observations in this part the sea is much agitated, and breaks at intervals in the direction of N.W. and S.E. I think that it may be a part of the vigia of Manoel Luiz, and the breakers seen by da Sylva. Without being able to assert that it may be shoal enough for a vessel to ground on in parts, I think that it is dangerous to cross it in bad weather, on account of the heavy sea which you may meet with.\*

VIGIA of M. DA SYLVA.—M. Roussin says that, in 1825, he was apprized of the existence of a group of rocks, said to have been discovered by *M. da Sylva*, an officer of the Brazilian Marine, and he enters largely into the question whether they may not be those of Manoel Luis. The position assigned to the Vigia of M. da Sylva is  $0^{\circ} 32' S$ ., and  $44^{\circ} 17' W$ ., and it consequently lies, according to this account, seven leagues to the northward of that of Manoel Luis. But we find that this Vigia of M. da Sylva has been laid down, in the same parallel, *at a degree farther to the West*; upon what authority we know not; and confess, with sorrow, that we have not more information on the subject.

## MARANHAM TO PARÁ.

**PARÁ** or GRAND PARÁ is the northernmost province of Brasil, and is celebrated for its cotton, sugar, india rubber, vanilla, chocolate, and coffee. The climate here is very sultry; the woods abound with valuable timber, of great solidity and beauty, and trees that yield odorous balsams.

The more proper boundaries of this immense country are limited by the River Ayapoek, French, Dutch, and British Guiana, on the North of the Amazon, and by the rivers Yamunda, and Madera on the West, following the Madera South of the Amazon to the Falls of St. Antony, in latitude  $8^{\circ} 50'$  South. A recent writer, a citizen of Pará, includes in the province of Pará the whole region West to the Yavari, in  $70^{\circ}$  West, or the country called the Province of Solimoes, with the exception that the latter region and the greater part of Pará is still uninhabited, except by nomade tribes. The authority of Pará, it is true, is as much extended over these wild lands as any other under the Brazilian government.

"This immense extent of land," says Baena,† "is agreeable to live in, fertile, covered

\* Although we have given this extract it will be seen by reference to our chart that Capt. *W. Hewett*, in *H.M.S. Inconstant*, passed over this tract in 1814, and found the same depths as here enumerated, and as given on the chart.

† "Corographical Essay" on the Province of Para, by Antonio Ladislau Monteiro Baena, a native of Pará, Engineer and Professor of the Military School in Belem of Pará, and Member of the Historical and Geographical Institution of Rio de Janeiro. Published at Pará, in November, 1839

by a luxuriant vegetation, which is gifted with many rare varieties, and by majestic forests composed of splendid trees, and proper for domestic or naval uses. It contains extensive lakes, towering mountains, and vast valleys; the number of large rivers it encloses is astonishing."

The land is almost, without exception, of the most fertile description, and particularly so in the neighbourhood of the rivers and on their numerous islands, where the soil consists of successive alluvial deposits from four to eight feet deep.

*Population.*—The earliest tables of the population of the province are those of 1749, which then gave to the city of Pará 900 hearths and 6,579 inhabitants. After these we have only tables for the following years, viz.: 1788, 1,083 hearths (families) and 10,600 souls; 1801, 1,820 hearths and 11,500 souls; 1825, 1,930 hearths and 13,240 souls; 1830, 1,740 hearths and 12,467 souls.

We have given on page 5 some remarks on the climate of Pará, which will be interesting to the sailor, and we here subjoin some further remarks on the same subject.

Baena says,—“There is no particularly sensible difference in the climate of this province all the year round, yet there is a particular time for the production of fruits. The more lasting rains begin regularly in December or January, and last till June or July. On the upper part of the river Solimões they begin only in May. At that time some intermittent fevers (Tertian and Quartan) make their appearance, by which the forest Indians suffer much, because they have no means of curing or nursing themselves, and, like all savages when falling ill, become immediately pusillanimous. At that time the rivers also swell and rise above their ordinary banks, and in some, particularly the Amazon and Madera, the voyages upward become very troublesome, because of the great currents which the barges and canoes must overcome by being drawn by ropes from the banks; towards the evening very severe storms are frequent, and almost of daily occurrence on those rivers, and often as dangerous to small craft as the above named.

“The verdure of the trees is uninterrupted all the year round, and about October or November only the pasturage gets sometimes dried up on the more elevated points, because August, September, October, and November, are the least rainy months.

“The morning air is particularly delicious. As the afternoon approaches a pleasing coolness comes on, and the nights are generally sufficiently cool, and the climate does decidedly not possess that high degree of temperature which the tropical situation of the country would authorise us to expect.

“The innumerable rivers, bays, and lakes, the prevailing north-west and East trade winds, and the extensive forests, refresh the air in a wonderful manner. In 1839, among twenty-seven parishes there were existing thirty-six men and thirty women above ninety years old, amongst which were eleven white men and seven white women, and there is credible proof of an Indian woman having reached the age of 200 years.”

The voyage from Maranham to Pará was formerly performed by canoes coasting round not less than thirty-two bays, some of them so broad, that the opposite land is frequently invisible.\* At present the voyage is performed in a steamboat in from two to three days. The coast is uniformly low, and much intersected with bays and lagoons. The southern mouth of the Amazon is usually called the Pará river. The entrance is intricate, and by no means safe, as there are no prominent landmarks. The entrance lies between the two dangerous shoals of Tigioca and Braganza. Vessels have been frequently wrecked on these, and the crews have sometimes all perished. In descending the river there is little danger. If the weather is clear, the breakers on the Tigioca and Braganza banks are seen as the tide flows upwards; after entering this mouth of the Amazon the conflict of the ascending and descending waters is called by its aboriginal name, *pororoca*, and characterises the navigation for some hundreds of miles. No sailing vessel can descend the river while the tide is rushing up from the ocean; and both in ascending and descending distances are measured and regulated by tides. Pará is said to be three tides from the ocean, and a vessel entering with the flood must anchor during two ebb tides before reaching the city. Canoes and small vessels, to avoid any danger from the *pororoca*, generally lay-to in certain places called *esperas*, or resting places, where the water is little agitated. Most of the vessels used

\* The bays and lagoons along the coast are often connected by intricate streams and channels. The former circuitous voyage in canoes traversed more than double the present direct voyage. The canoes were driven ashore each evening, and the party rested for the night. They were navigated by Indians, who then received only about twopence per diem.

in the Amazon are constructed with reference to its tidal navigation ; that is, for floating with the stream rather than for sailing before the wind, although sails may often be serviceable.

The regular ebb and flow of the tides in the Amazon are observed as far as the confluence of the Madera, 600 miles above the mouth. The *pororoca* is much more turbulent on the northern side of the island of Marajo, where the mouth is broader and the current more shallow. M. de la Condamine, a hundred years ago, wrote :—"During three days before the new and full moons, the period of the highest tides, the sea, instead of occupying six hours to reach its flood, swells to its highest limits in one or two minutes. It might be inferred that such a phenomenon could not take place in a very tranquil manner. The noise of this terrible flood is heard five or six miles, and increases as it approaches. Presently you see a liquid promontory twelve or fifteen feet high, followed by another and another, and sometimes by a fourth. These watery mountains spread across the whole channel, and advance with a prodigious rapidity, rending and crushing everything in their way. Immense trees are instantly uprooted by it, and sometimes whole tracts of land are swept away."

In the following description of the coasts between Maranham and Pará we have availed ourselves of the work of *M. Tardy de Montravel*, of the French Marine,\* the surveyor of this portion of the Brazilian coast, to which we have before alluded, and also to that of *M. Ch. Ph. de Kerhallet*.† From these observations and surveys we have also corrected our charts, by referring to which these directions will be better understood.

**BAY OF CUMA.**—We have seen that the western shore of the Bay of Maranham runs to the N.N.W. from Point Tatinga to the Morro Itacolumi; at the foot of this mount it turns sharply round to the West, and forms by a deep indentation of the coast the great Bay of Cuma, of which the North point is terminated by a low and wooded island called *Isla dos Atins*. This bay, encumbered with shoals, has, at its mouth, a small island called *Ilha dos Ovos* or *Taruoca*, which offers, I have been assured, good anchorage; but the channel leading to it is shallow, and of difficult navigation. Several rivers, of which the principal is the *Guimarens*, discharge themselves into the bay, and cause, throughout its extent, a strong tidal current; the flood running W.S.W., and the ebb E.N.E., influenced by the East and West direction of the bay.

At three miles N. by W. from the Isle dos Atins is that of *Tucunanduba*, forming with *Tru Island*, which immediately follows it, the *Bay of Tucunanduba*. After *Tru Island* comes *Point Cauoca*, where the coast, running to the West, forms the *Bay of Cabello da Velha*, at the North point of which is the *Isle Mangas*.

This bay is deep, and receives, like that of Cuma, many streams; it affords anchorage to small vessels, and a channel on the North side; but, like all those on the continent, it is of difficult navigation.

Between the Isle Mangas and *Point Tury* you meet with the *Islands of João-Sinho, Gajiritiva, and Carapatitiva*; then comes the *Bay of Turyrana*, bounded on the North by the groups of the Isles of San João, which separate it from that of Turyassu. The former is encumbered with shoals, and is considered as closed to navigation for vessels of any size.

**ISLES OF SAN JOAO.**—These islands are low, like the islands and coast which precede them. They have on their N.E. side some sandy downs, by means of which you cannot fail of recognizing them. The easternmost of the group is detached, and has not any vegetation up to its summit, which is rather high compared with the neighbouring lands. The white sand, of which it is entirely composed, has given to it the name of *Lançoes*. To the E.N.E. of the group of San João, a sandbank runs out, on which the sea breaks, and towards the North there is a flat of yellow sand, of very rapid declivity towards the N.W., but gradual and regular to the N.E.

At 45 miles N.E. by E. from these islands is the Bank of Manoel Luiz: the channel between has been sounded partly by Admiral Roussin and partly by M. Lartigue and M. de Montravel. It is quite clear, and sufficiently wide to be navigated with confidence; nevertheless, it was much dreaded for a long time by navigators. Now that the position of the shoal has been exactly determined, all apprehension has disappeared, and vessels, leaving Maranham, frequent it with perfect security. The breadth of the channel, the close

\* "Instructions pour Naviguer sur la Côte Septentrionale du Brésil par M. L. Tardy de Montravel, Capitaine de Corvette, &c." *Annales Maritimes et Coloniales*, July, 1847.

† "Instruction pour Remonter la Côte du Brésil depuis San Luiz de Maranhão jusqu'au Para, &c. &c." Par Charles Philippe de Kerhallet, Lieut. de Vaisseau, etc. *Ann. Marit. et Col.* 1841.



vicinity of the point of departure which can be taken, the passage of yellow sand which the lead shows upon the bank of madrepores mixed with grey sand, and the progressive increase of depth when you have passed the parallel of the Isles of San João, are sufficient reasons to dispel any dread which this passage caused, and which render unnecessary any extended instructions on its navigation.

**BAY OF TURYASSU.\***—Limited on the E. by the Isles of San João, and on the West by *Point Tamandua*. The bay of Turyassu presents an opening of nearly 20 miles in breadth, occupied almost entirely by sandbanks. It affords anchorage in its eastern part, to the East of the bank of *Muricituduba*, an anchorage which is more sheltered the deeper you go in it to the South, or nearer the land. It is prudent, however, not to pass farther to the South than S.E.  $\frac{1}{2}$  S. from the mouth of the first river you come to on the western side of the group, and not nearer the land than in 6 fathoms water.

A vessel of small draught requiring repairs, and consequently making a longer stay, can, by passing through the narrow channel which runs by the principal group, come to an anchor between them and the *Isle Jabaroca*, where they will be more sheltered from the sea outside.

**POINT TAMANDUA** projects more than 7 miles to the N.E., and off it is the extremity of a line of breakers, which continues along the coast at a mean distance of from 5 to  $7\frac{1}{2}$  miles, as far as Cape Gurupi, to which it approaches to within nearly  $1\frac{1}{2}$  mile. This bank, intersected by some cuts, which give access to several intermediate bays, surrounds also the numerous islands which border the coast, and prevent any approach to it.

Near Point Tamandua you may distinguish with difficulty the islet *Motuoca*; then the islands *Acara*, *Maracasumè*, *Pirucaua*, *San Joaosinho*, each of which gives its name to a bay which it divides from its neighbour on the West. The *Bay of Pirucaua* affords an anchorage of difficult access across the banks, which extend far out to the N.E. from the island of that name.

**MORRO PIRUCAUA.**—The coast offers one landmark, the *Morro of Pirucaua*, an isolated hill, which is the more remarkable as it is the only one you meet with after the Isles of San João.

To the West of the Bay of San Joaosinho; you find the *Isles dos Irmaoens*, and that of *Pria*, separated by *Trumahi Bay*.

From *Pria Island* to Cape Gurupi the coast recedes, and forms a large bay, with the Islands of *Sumacas*, *Redonda*, *Gurupi*, and *Rasa*, in its opening.

The *River Pria* runs into the eastern part of this large bay, to which it gives its name; the western part takes its name from Cape Gurupi, which bounds it on the West.

**CAPE GURUPI** is in lat  $0^{\circ} 54' 5''$  S., long.  $46^{\circ} 11' 3''$  W., and is remarkable, from its distance from the adjoining land, and by the sands which lie at its foot, and rise in several points, in patches and cliffs. The neighbouring islands serve equally to make it recognisable; but these are not the only characters which make it the best landfall of all this coast.

The most particular features of Cape Gurupi are three mountains rising in steps at equal distances from one another, from the coast of the Bay of Gurupi to a distance of 25 miles in the interior. Although of middling height, they are remarkable, because the land preceding it to the East, and that following to the West, are low, and scarcely to be seen at the distance of 14 miles, while, in clear weather, the hills in question are visible at 25 miles off.

**BAY OF PRIA UNGA.**—To the West of Cape Gurupi is the Bay of *Pria Unga*, the western point of which is formed by *Manijetuba Island*, and on the South side of it there are three islands by which it may be known. The River Gurupi enters, by a mouth of a mile in breadth, the S.E. part of this bay; it is said to be navigable for small vessels.

The edge of the bank off the coast, which we have said approaches Cape Gurupi, again runs off to the distance of 5 miles from the land at *Manijetuba Island*, and running at this distance, as far as the Bay of *Caité*, prevents the bottom of the bays from being distinctly seen.

At 12 miles to the W. by N. from *Manijetuba Island* is that of *Carauassu*, forming

\* "Tury-assu (Great Tury) in the lingoa geral still used among the lower orders and Indians. In Brasil the word *assu* means great, and *mirim* small. The larger portion of the names on this coast belong to the Tapuya language."—*M. de Kerhallet*.

with it *Priatinga Bay*, and with *Point Anajaes* lying nearly 10 miles W. by N., the *Bay of Punga*.

**JAPARIGUE ISLANDS.**—*Punga Bay* is distinguished from that of *Priatinga* by the two islands called *Punga*, or *Japarigue*, which can be seen from midway between the two limits of the bay. Divided by a small channel of about a mile broad, and lying in a line parallel to the track in running along the coast, the *Japarigue Islands* never cover each other, but remain perfectly distinct and separated. This observation is important, inasmuch as they cannot then be confounded with the islands which lie in the middle of the *Bay of Caité*, which is separated from that of *Punga* by *Point Anajaes*.

To the North of *Point Maniitjuba* is a shoal upon which the English steamer *Growler* found three successive soundings of  $4\frac{1}{2}$  fathoms in the middle of the deep water soundings. The position was not fixed with great accuracy, and it has been called *Buckle Bank* after the commander of the *Growler*.

**CAITÉ' BAY.**—This bay, which is the largest on the coast, receives in its South part the river of the same name. It is remarkable for three small islands which divide it into two nearly equal parts, the outermost of which stands nearly 4 miles North of the bottom of the bay. This last island has on its North side a sandy beach, terminated on the West by a small cliff, by which it may be readily known. These islands cannot otherwise be mistaken for those of *Punga*, because, as was stated above, the latter always appear well separated, while the former project over each other, and appear as one.

*Caité Bay* is closed by the great bank which follows the coast as far as *Point Mtonoca*. A cut in the bank leads to an anchorage under the islands, but it is difficult to use, and only practicable for very small vessels.

*Maniitjuba Island* is low and wooded, and forms the West Point of *Caité Bay*, which divides it from the *Bays of Coati Paru* and *Miriquiqui*; these have for their common limit a point jutting to the northward called *Japirica*,\* which is distinguished from the surrounding coast by its being rather higher, and by the reddish colour of its extremity; besides this it is remarkable for appearing, more particularly from E.N.E., as an island rounded at the summit, and well separated from the land.†

The West point of *Miriquiqui Bay* is distinguished by a clump of trees higher than those which cover the neighbouring coasts. It has, seen from some distance to the north-west, the appearance of a fortification, and is known to the mariners here under the name of *Carro de Mato* (the load of bushes), a name which also belongs to the point on which it stands.

In coming from the East you will see, if the weather is clear, some land which is sensibly elevated above that around; this is *Mount Piraussu*, lying nearly 3 miles S.  $\frac{1}{2}$  W. from the village of *Salinas*.

**BAY of SALINAS FALSAS.**—After the *Bay of Miriquiqui* comes that of *Salinas Falsas*, remarkable for the downs of white sand lying at the eastern point of the bay. Seen from sea they show like breakers or ships' sails; one of them in particular, separated from the three principal, and raised above the water, is just like a boat's sail with the sun shining on it.

Soon after having made out these downs you will have no difficulty in seeing the West point of the *Bay of Salinas Falsas*. It then appears like a small round island, but soon joined to the continent by small hummocks, and forms but one shore with the bottom of the bay. This extreme point is called *Atalaia Point*, is in lat.  $0^{\circ} 33' 5''$  S., long.  $47^{\circ} 16'$

\* This point is also called *Falso Carro de Mato*, to distinguish it from the East point of *Caité Bay*, for which it is sometimes mistaken.—Lieut. de Kerhallet.

† "The *Bay of Salinas Falsas* presents the following resemblance to that of *Salinas*. First, downs of white sand, principally on their western side. Second, a long beach of very white sand, which produces, at a certain distance, the effect of breakers; and the summit of the coast being covered with trees in both. The principal differences between them are these:—first, the *Bay of Salinas Falsas* is very deep, and you can hardly see the land at the bottom. That of *Salinas* forms but a slight curvature in a semicircular form, in the middle of which stands the village. Second, *Carro di Mato*, the eastern point of the one, is peaked, and has a clump of trees on its summit, and appears of a blackish tint at 7 miles off. *Atalaia*, the East point of the other, is less peaked, and terminates in a long point of sand; at 7 miles off you can discern its reddish tint and its rocky character; it has only some bushes on its summit. Third, after having doubled *Point Carro di Mato* you can see some land more to the North than it is, whereas beyond *Atalaia* the land only forms a long line, without any projections, to the North as far as *Point Curucua*, and you also then cease to perceive the breakers"—Kerhallet, p. 31.

47'' W. At nearly two miles from its extremity, which is of a somewhat reddish colour,\* it shows a beach and downs of white sand, spotted with patches of verdure, while the thickets, which crown its summit, merge into the trees of the interior. A small hillock of white sand, at the East end of the beach, is rather remarkable.

The construction of a lighthouse on this point was resolved on in 1838, but the enterprise was abandoned for the time, and it is to be feared, notwithstanding its importance, that it is indefinitely postponed.

**SALINAS BAY.**—Coming from the East, Point Atalaia appears to be the end of the coast; but, on approaching its meridian, you soon discover other land from which the point projects. This is the bottom of Salinas Bay, having at the base a long beach of sand, and some white downs, rather elevated. You will soon see the village of Salinas upon a wooded plain. You will at first only see the church, standing out white on the lands of the second range of hills, but, when you are about 6 miles North of the village, you can distinguish the red colour of the roofs.

The level land upon which Salinas stands falls gradually to the West, where it terminates in a clump of high trees, which serves to crown it. The land of the second range continues to run to the S.W., more elevated than those preceding to the East, and those which follow to the West form, with Point Atalaia, a point of recognition which cannot fail of being remarked.

To the N. by W.  $\frac{1}{2}$  W. of the village is the centre of a shoal, upon which there is but 4 to  $4\frac{1}{2}$  fathoms. It is  $2\frac{1}{4}$  miles long from S.S.W. to N.N.E., and  $1\frac{1}{2}$  from E. to W. It leaves between it and the land a channel of  $2\frac{1}{2}$  miles in one part, of which there is muddy bottom. Some persons have assured us that they have found less than 3 fathoms water on it, but we have never found less than 4. Salinas is the pilot station.

**SALINAS BAY to POINT TIGIOCA.**—Salinas Bay is bounded on the West by the *Island of Praia Grande*, which separates it from that of Maracuno. This island is remarkable by a very high tree which crowns it like a tower, and by a sandy beach at its N.E. point. The great bank off the coast, which is close to at Point Atalaia, commences, at the meridian of Salinas, to run rapidly to the North to within  $2\frac{1}{2}$  miles of the E. point of Praia Grande; there it takes a direction parallel with the N. coast of the island, and then runs again to the N.W., to 4 miles from the W. point of the same island.

You will soon see *Point Marapani*, the western end of *Maracuno Bay*. This point is the N. point of *Maranduba Island*, and is distinguished by a little hummock, and sandy beaches and downs, which, although but slightly elevated, are easy to recognise, because it is the only point of the coast between Atalaia and the river Para, which has the same aspect. Its recognition is important, because on its meridian is the northernmost point of the bank off the coast. We have seen that it runs to the N. from the meridian of the W. point of the island of Praia Grande; thence it runs to the W., turns sharply to the N. to 4 miles from Point Marapani, and takes an E. and W. direction.

From the meridian of Point Marapani you may see the low point which is the N. part of *Cajetuba Island*. This forms, with Maranduba Island, the large *Bay of Piracumbaua*, at the bottom of which you may easily distinguish the outline of the island of the same name.

Then comes the *Bay of Cajetuba*, which divides the island of the name from that of *Curuça*, the W. point of which, higher than the land we have seen from Salinas hither, falls sharply to the sea. Particular notice must be taken here of this steepness of Point Curuça, falling abruptly to the water and not showing any sand at its extremity, to distinguish it well from that of Cajetuba, which is low, and from Tijoca Point, which we shall soon see to the West of Curuça, and which is low, and ends in a large sandy beach. Between these two last points there is a very deep bay, or rather river, bearing the name of *Curuça*. We shall see hereafter how important it is that we should not mistake *Point Curuça* for any other near it.

\* I would not advise any one, however, to depend too much upon this reddish tinge for making out the point. The downs of Salinas Falsas, and the sandy coast which precede Salinas Falsas, are better points of recognition.—*M. de Montravel*.

*M. de Kerhallet* says that the reddish tinge is peculiar to Point Atalaia, although it has been attributed to Cape Carro de Mato:—"I do not deny entirely that the reddish tinge exists, which M. Guérinault assigns to Point Carro di Mato, which he calls Mt. Piraussu, but I have never been near enough to see its whole height, and I can affirm that, at 7 miles off, it does not appear of this colour, and I think it ought not to be approached nearer.



At nearly 4 miles from the N.E. point of Curuça Island the edge of the bank bends to the W.S.W., and nears the Point Tijoca, which it rounds at a mile distance.

### MOUTH OF THE RIVER PARA.

POINT TIJOCA, in lat.  $0^{\circ} 34' 0''$  S., long.  $47^{\circ} 51' 18''$  W., forms the eastern point of the estuary of the River Para, of which the western limit is Cape Magoary, the N.E. point of Marajo Island. This mouth is 33 miles in width, and from the middle of it you cannot see either coast. It is partly filled with shoals, which we will describe before entering the river.

These banks are divided into three principal groups, which I shall designate by the names of the East, the West, and the Central.

The first consists of the Banks of Bragança, Coroa Nova, and Coroa das Gaivotas, without mentioning the great bank along the coast which we have followed as far as Point Tijoca, and which afterwards joins itself to the South of that point to the bank of Gaivotas.

BRAGANÇA BANK.—The northernmost of the group is that of the Bragança, which is important to make out clearly, as it lies in the usual passage on entering the river. It is not generally dangerous, because the N.W. face breaks at all times of the tide, although we have sometimes with a calm sea looked in vain for the breakers; but I attribute this extraordinary fact to the circumstance of the sun being about to set, and shedding so strong a light on the water as not to allow anything to be seen in the western quarter. The North extremity of the bank is  $7\frac{3}{4}$  miles N. by W. from Point Tijoca; its S.W. point, named Espadarte, is  $6\frac{1}{2}$  miles N.W., and its S.E. point at  $3\frac{3}{4}$  miles to the North. It is composed of different shoals, of which three, according to the local seamen, uncover at spring tides. They say also that there is between them some small channels, in which there remains two fathoms at low water; but, for the purposes of navigation, we must consider this bank as a continuous flat. It is very steep on the West and South sides, and runs out in a flat to the N.E. and E., on which there is from 5 to 6 fathoms, and the edge on the East side is very abrupt, in fact it drops, in the interval between two casts of the lead, from 6 to 12 and 18 fathoms. The Bragança Bank is formed of hard sand, lying, according to the pilots, on a bed of hard mud, and they also say that they do not shift.

COROA NOVA, and CHANNEL DOS POÇOENS.—The Coroa Nova lies to the S.S.W. of the Bragança Bank, and is divided from it by a deep channel of a mile in breadth, which was believed not to be navigable before *La Boulonnaise* explored it. Capt. de Montravel has called it the *Channel dos Poçoens*; there is good depth in it for any ship; and we shall see hereafter the security it affords for entering the river.

The Coroa Nova is a bank of sand of recent formation, and shifting, at least as far as regards its N.E. end. An old negro fisherman, who had lived on the coast for 70 years, told us that its N. end formed and disappeared by turns, which we can readily conceive, when we reflect that a current of five or six miles an hour runs incessantly through the channel into which it extends.

CHANNEL OF CASSARD.—The bank which we are going to describe is separated from that of Gaivotas by a channel as wide, but, for navigation, much less simple and certain than that of dos Poçoens, as I proved by the navigation of the brig *Le Cassard*,\* the name of which I have given to the channel.

As will be seen by the chart this channel is tortuous, and has a less depth of water in it than the one I have spoken of above.

*Bank das Gaivotas*.—This is a large flat of sand, uncovering nearly altogether at low water, and reaching to the coast, from which it is separated by a small channel navigable only for boats.

THE POÇO.—Between the Bragança Bank and the lands of Curuça and Tijoca there is a wide and very deep channel called Poço (the Well). The current in it is violent, and up to this time it was considered very dangerous, and infallibly lead to the destruction of vessels driven into it by the currents or by mistake. But now that *La Boulonnaise* has discovered the Channel dos Poçoens, these fears will doubtless cease, and the facility of the route for leaving the river will give confidence to those who use it.

SANTA ROSA and KIRIRI BANKS.—The western group of shoals is a combination

\* This 20-gun brig, here spoken of, grounded near this channel in 1837; she cleared, and then immediately dropped anchor in 6 fathoms. She was then carried through the channel by a pilot named Juan, but with great difficulty, and against the advice of the Piloto Mor.—*M. de Kerhallet*.

of the flats which must be considered as united to Cape Magoari, although, in reality, they are separated from it by a channel: but it is so narrow that it cannot be considered as fit for the purposes of navigation. This collection of dangerous flats, which extend to 14 miles East of Cape Magoari, is known in the vicinity under the collective name of *Santa Rosa*. They are all of sand, and break heavily when there is much sea, but sometimes they do not show.

From the extremity of the Banks of Santa Rosa you can see clearly Point Magoari from the deck of an ordinary vessel. The flood runs to the W.S.W., and the ebb E.N.E.

Among the group the bank of *Coroa Kiriri* is also to be placed, lying W.N.W.  $\frac{1}{4}$  W. from Point Tijoca, and South of the eastern extremity of the Banks of Santa Rosa. This bank, although out of the route of vessels entering or leaving, bounds, to the N., the Bank of Morisoca, of which we shall speak presently. It uncovers, it is said, at low tides, and shows generally at ordinary tides. Anchored off its N. point we saw, from the masthead, Point Magoari in full view; although the horizon was hazy, as it generally is in the dry season.

**CENTRAL GROUP: TIJOCA, SAN JOA'Ō, ADONIS, AND MONJUI BANKS.**—At nearly  $2\frac{1}{2}$  miles W.N.W. from the S.W. point of the Bragança Bank there will be found the South point of a group of three banks, lying on a line, N.N.E. and S.S.W., which together take the name of the *Bank of Tijoca*. They are designated, in particular, by the names of *Cabeça do Sul, do Meio, and do Norte*, (S., Middle, and North heads.)

The first lies N.W.  $\frac{1}{4}$  W. from Point Tijoca, and N.  $\frac{1}{4}$  W. from the opening between two small low islets which are seen not far distant to the East of last land in sight to the South. There is, it is said, nearly 6 feet water on its highest part, but we did not find less than  $2\frac{1}{2}$  fathoms; but this does not disprove the former statement, as we were interrupted in our soundings by the loss of our last anchor.

The *Cabeça do Meio* lies N.N.E.  $2\frac{3}{4}$  miles from the South *Cabeça*, and has only  $9\frac{3}{4}$  feet water on it; from its centre Point Tijoca bears S.E. by S. The *Cabeça do Norte* is  $1\frac{3}{4}$  mile N.N.E. of the preceding, and bears N.N.W.  $\frac{1}{4}$  W. from Point Tijoca. It has upon it only  $7\frac{1}{2}$  feet at low water. These three banks are separated from each other by channels, which we crossed at all times without finding less than  $3\frac{3}{4}$  fathoms; but I would not advise any but a very small vessel to hazard crossing.

The *Cabeças* of Tijoca are of hard sand, and not of rocks, as is supposed by some; each of these is not more than half a mile in extent, and they show so little, that it was only after two days' search, with the ship itself and two boats, that we were able to find the southern one. Their edges are very steep-to: between two casts it jumps from 11 to 6 fathoms; the next cast you are on the shoal itself.

When the sea is at all agitated by the wind the currents cause violent overfalls throughout the space occupied by these three little banks, so that it would be thought to be breakers. This effect taking place upon its margins, indicates their extent; but, as it does not always show in this manner, it is an indication upon which no dependence can be placed.

**BANK OF SAN JOA'Ō.**—To the W. some degrees N., and at 7 miles from the *Cabeça do Sul*, you meet with a sandbank, on which is found  $3\frac{1}{2}$  fathoms water; it is that of San João, which the pilots and others, ignorant of the real situation of the banks, improperly placed to the S.W. of that of Tijoca.

**ADONIS BANK.**—To the North of San João, at  $6\frac{1}{2}$  miles, another steep bank is found, on which there is  $2\frac{1}{2}$  and  $2\frac{3}{4}$  fathoms. Its highest part is so narrow that, in crossing it, you can hardly obtain three or four casts to indicate it. It was, without doubt, on this bank that the brig *Adonis* touched, and unshipped her rudder, and, as no other bank answers the description, I have given it this name.

*Monjui Bank.*—To the N.E.  $\frac{1}{4}$  E. of the Adonis Bank there is a bank, which I believe to be the Monjui of the pilots. It extends E.N.E. and W.S.W. for an extent of nearly 5 miles, and a mile broad at its W. extremity, diminishing considerably in its E. part. There are 5 to 3 fathoms on it.

The three shoals of which we have just spoken do not show. Perhaps they are not the only ones contained in the large area which divides the Bank of Tijoca from those of Santa Rosa; but, I believe, from the care which was taken in sounding, that there are no others.

The banks we have now described leave between them different passes, which are used for entering, or for leaving the river.

We have already mentioned the Pass of Poçoens, which, so recently explored, is not yet frequented.

The Bank of Bragança is separated from that of Tijoca by a deep channel of  $2\frac{1}{2}$  miles broad. It bears the name of the *Channel de Dentro*. It is the only one used for entering the river, and, notwithstanding the difficulty of beating through so narrow a passage, it is that preferred by vessels leaving which draw above 15 feet water. The great space which separates the Tijoca Bank from those of Santa Rosa, takes the name of the *North or Monjui Channel*; it would be much more natural to call it the *Western Channel*. This channel is generally preferred by vessels drawing under 15 feet water. We will now proceed with the coast.

**THE COAST BETWEEN POINT TIJOCA AND BELEM OR PARA.**—To the South of Point Tijoca the coast forms a bay, into which debouches the channels or rivers, which cut into numerous islands the land lying to the South of Curuça Bay. This indentation is divided into two parts by the projecting point of *Tapari*, remarkable by three very large trees, which overtop the surrounding vegetation, and almost appear like hummocks. This point forms, in a manner, the eastern side of the mouth of the *River San Gaëtano*, as the Point Taïpu is its western limit. Many secondary streams empty themselves into this channel. From the middle of the Channel de Dentro there will be seen, by the mouth of the River San Gaëtano, the two small isles, *Rasa* and *Ratos*, which will serve presently as a point of recognisance for the Cabeça do Sul of the Tijoca Bank.

The **GAIVOTAS BANK** extends to Point Taïpu; its South part is also called *Coroa de San Gaëtano*, a name which the pilots sometimes give to the Islands Ratos and Rasa.

The lands off *Point Taïpu* are visible when you are abreast of the North breaker of Bragança: they then seem like a low island; but, as you approach them, they join the coast, and then you see them run off to the S.S.W., having at a distance the appearance of two elevated ridges.

You will soon see, to the South of these ridges, a large tree, resembling a tower, which rises near to the North point of the *Furo de Bareta*. This tree it is important to make out, if you wish to enter the pass which leads into the river of Vigia.

Then comes *Cape Carmo*, which appears to rise into a peak, but which the trees, having their bases in the water, alone cause this appearance.

The *River de Vigia* has its mouth closed in a great measure by the bank called *Coroa do Correio*, which extends from Cape Carmo to the bearing of S.E. and N.W. of the large tree which we mentioned above, at the mouth of the *River Bareta*. It follows the coast at half a mile off, leaving a channel of that width at its North end, but which contracts, at the entrance of the river, to about 10 cables' length in width.

The Coroa do Correio dries in some parts at spring tides; it is of hard sand, and the sea breaks heavily on it sometimes. It will be seen, however, that it is not to be feared so long as you do not pass to the E. of the meridian of Cape Carmo.

**COLARES.**—This last cape is the N.W. point of the island of Colares, on which you will soon perceive the village of the same name, situated above a sandy beach, and is sheltered from the sea by a line of rocks which, being quite uncovered at half tide, form a causeway at  $1\frac{1}{2}$  mile from the shore. The land is more elevated than that which has preceded, and the coast runs to the S. from the point contiguous to the village, as far as Point Cocal, where it turns sharply to the East. On this portion of the coast are several patches of rocks.

**BAHIA DO SOL.**—Point Cocal forms the N. extreme of a wide and deep bay, called Bay do Sol, into which runs, on the North, the river or Furo de Vigia; and to the South, that of San Antonio. It is partly filled with a large flat of sand, which dries in places, and runs N. and S. from Point Govares to within half a mile of the S. side of the bay. When you have passed the parallel of the village of Colares, you will see the South side of the Bay do Sol, which terminates sharply to the E. at a right angle, and to the W. by *Point Marau*.

**POMBAS ISLET.**—At nearly halfway between these two points you will see, upon the coast, a round and wooded islet, which, for a long time, appears to be part of the surrounding land. This is Pombas Isle. Against it there lies a rocky flat, which extends to nearly a mile N. from it, and runs along the coast as far as the East point. This rocky shoal is separated from the sandbank, previously mentioned, by a narrow channel, which leads to



the bottom of the bay. The sea is sometimes very heavy, more particularly with the flood tide, in the mouth of the Bay do Sol.

**COAST OF MARAJO ISLAND.**—From Cape Majoari the coast of Marajo, washed by the river Para, runs nearly North and South, as far as the parallel of Cape Carmo. Low, and covered with trees, it presents the mouths of a great number of rivers, of which the principal is that called *Igarapé Grande*. Its breadth is nearly a mile, and it is affirmed that it is navigable for a great distance in the interior. Nearly all these rivers communicate, either directly or indirectly, with the lagoons which occupy a portion of Marajo Island, and for the most part they are navigable for boats.

At a mile and a half S. of the parallel of Cape Carmo you will see the *village of Joannes*, which name is sometimes applied to the island. Here the coast turns sensibly to the S.S.W., but does not change in appearance.

At nearly 5 miles S. of Joannes is the *village of Monsarras*, and 5 miles still farther, and close to the coast, is a low island, known by the name of the *Ilha da Coroa Grande*, lying upon the parallel of Point Cocal.

At this little island commences a great bank of sand, which partly dries, and which, turning to the S. at the distance of  $2\frac{1}{2}$  miles, extends to the N.E.  $\frac{1}{4}$  N. in a sweep to 6 miles from the coast of Marajo. Here it bends rapidly to the West, leaving between its E. point and the South end of the bank of Coroa Secca, lying to the N.E., a very deep channel, two miles wide.

**COROA SECCA.**—The bank of Coroa Secca is 5 miles long from N. to S., and nearly 2 miles from E. to W. On its South point there was, in 1839, a tuft of trees, which served as a beacon, but since that time they have disappeared, being carried away by the currents, so that it is now only shown by the breakers. The two last banks are very steep on their S. and E. faces.

**COROA MORISOCA.**—At 6 miles N.  $\frac{1}{2}$  W. from the N. point of the Coroa Secca, and 4 miles from the coast of Marajo, you find the South point of the Morisoca Bank, which, taking a curve towards the W., extends as far as the Coroa Kiriri, thus extending  $34\frac{1}{2}$  miles in a N.E. by N. direction. The Coroa Morisoca dries in many parts of its extent, and has between these higher portions some channels, through which the boats of the country pass, but they are shallow and uncertain.

The South point of Morisoca is divided from the Coroa Secca by an excellent channel, and very deep in its southern part; and the depth of which decreases rapidly from  $5\frac{1}{2}$  to 3 fathoms in its North part. This is the channel most generally used by the boats proceeding to the W. coast of Marajo.

Thus it is shown that this latter coast, from the parallel of Pombas Island to Cape Magoari, is fronted by a line of banks, leaving between them some navigable passes. They are again divided by a wide and deep channel, which possesses, doubtless, good anchorages, if vessels should be called hither by commerce.

**EASTERN SIDE CONTINUED.**—Pombas Island and Point Marrau have been described. At half a mile from this lies the little island of Guaribos, which is low and covered with some bushes. Its shores and the narrow channel separating it from the coast are clear.

The coast runs 5 miles to the S.W. to *Point Chapeo Virado*, where it turns sharply to South, as far as *Point Musqueiro*, where it runs E.S.E., forming, with *Barreiras Isle* farther to the South, the *Bay of San Antonio*.

Between Point Marrau and Point Chapeo Virado you will find at a mile from shore several rocky shoals, which cover at high water, and send out a spit under water which extends to the meridian of Chapeo Virado. This shoal is dangerous, and must be carefully avoided.

In front of San Antonio Bay, and S.W. by W. from Point Musqueiro, there is a small wooded island, rocky on its North side and sandy on its South, called *Tatuoca*; it is the advanced guard to the North of a group of islands which lie along the coast to the South as far as the city of Belem. From this island there runs to the northward, for the distance of  $1\frac{1}{4}$  mile, a rocky bank of unequal depth, and having some heads uncovered at low water.

**JETUBA ISLAND**, which follows immediately to the South, has also a bank running to the North for a mile and a half; it is of hard sand, and dries at spring tides.

The Bay of San Antonio is formed of a bank of mud, which extends from Point Mus-

queiro to that which terminates Barreiras Island on the South, and which is divided from Point Pinheiro by the River Magoari. From this point the coast runs directly South to the city of Belem. At 2 cables' length W.S.W. of the chapel of Pinheiro is a rock of small extent, on which there is but 10½ feet at low water.

The navigable part of the channel is contracted on one side by the mud bank which runs from the S.E. point of Ilha Nova, and extends 3 miles North of it; and, on the other, by a rocky point, extending 2 cables' lengths outside the ground, near to the extremity of which there is a circular fort, called *Forte da Barra*. To the North of the fort, 2 cables' distant, is an isolated and sunken rock, which requires attention in passing.

After having passed the Fort da Barra the channel widens, and the small islands which have followed it are replaced by a single one called *Ilha das Onças*, the shores of which are parallel with those of the continent, from which it is 2 miles distant. But this width is only in appearance; for the channel is divided into two parts, each of less than a mile in width, by a mud bank, which springs from *Ilha do Fortin*, and extends to abreast of the South part of the city.

Some time after having passed Point Pinheiro you may see, on the horizon, the principal church towers which crown the city, and other buildings will soon rise into view; and then the North part of the city will be seen at the bottom of the bay, on the South part of which it stands.

The anchorage is in front of the city, between it and the bank which lies in the middle of the channel.

**PARÁ**, or the CITY of BELEM, is situated on an elevated point of land, on the south-eastern bank of the Pará river, and eighty miles from the ocean. From the sea it has a very striking and pleasing appearance. The anchorage is good and safe, within an abrupt curve in the channel, which admits vessels of a large draft. The island of Marajo is twenty miles distant, but invisible from smaller islands intervening.

Pará, like most Brazilian towns, exhibits whitened walls and red tiled roofs; it is regularly laid out; and has public squares, called the Palace place, the Quartel, and the Largo de Polvora, and several smaller squares in front of the cathedral, and of several of the convents. The streets are neither well paved nor wide. There are many large well-built houses, but the back streets consist chiefly of wretched small dwellings.

The best houses are well adapted to the climate, with a wide veranda often extending around the outside of the building; and another, along at least three sides of a large interior area. A part of the inner veranda, or a room connected with it, serves as an airy and pleasant eating room. The front rooms only are ceiled, except in the best houses. Latticed windows are more common than glass; but occasionally some houses have both; preference is always given to lattices in the dry season. Instead of alcoves and beds for sleeping, hammocks swing across the corners of all the large rooms, and along the verandas. Some houses have hooks for swinging hammocks for fifty or sixty persons every night.

The insurrection of 1835 was greatly injurious to Pará. In almost every street there are houses still battered with bullets or cannon shot. Some have been repaired, others abandoned.

Pará fronts the river, and in its rear there is a beautiful shaded walk. The Estrada das Mangabeiras extends from near the marine arsenal, on the river side, to the Largo da Polvora on the eastern extremity of the city. It is intersected by avenues leading from the Palace Square and the Largo do Quartel. Its name is derived from the mangabeira trees, with which it is densely shaded on either side. In the immediate vicinity of this road is the old convent, now hospital, of San Jozé, and near by it the *recolhimento* of orphan girls.

There are a few private gardens in the vicinity, but neglect of improvement has followed disorders that have for many years prevailed in this town; many streets are overgrown with thick bushes. In the suburbs are forsaken tenements, and the walls of large houses. Beyond the actual precincts of the city a dense forest commences.

Mr. Kidder says, "Nearly all the revolutions that have occurred at Pará are directly or indirectly traceable to the spirit of revenge with which the bloody expeditions of the early slave hunters are associated in the minds of the natives and mixed bloods throughout the country."

At Para, as well as at all other Brasil ports, ships arriving even in ballast (either from foreign or coasting) are required to produce a sealed manifest under a penalty of 500 milreis, equal to £50 sterling; in the first instance from the Brazilian consul, in the second

from the customhouse at the port of departure. I unwittingly incurred this penalty, but through the influence of my consignee it was mitigated to 100 milreis, equal to £10. As this fact is not generally known to masters and brokers connected with the trade, the knowledge of it cannot be too widely disseminated.

No vessel meeting with an accident should, if avoidable, bear up for Pará, as a refitting port, the common articles of ship chandlery being barely procurable; Maranhão or the West Indies are much to be preferred.

The cathedral of Pará, said by Mr. Kidder to be the largest religious edifice in the empire, was commenced in 1720, and completed and consecrated in 1775 by a bishop, attended by the monks, magnates, and people. Like most of the other churches it is built in the form of a cross.

The population of the Comarca of Pará, or Belem, in thirty-two villas, seventeen hamlets, and five missionary stations, is stated by Baena, in 1839, as follows:—Free people, 90,767; slaves, 26,961=117,728. Comarca of the great island of Joanés Marajós, in five villas and six hamlets:—free people, 10,689; slaves, 2,040=12,739. In the Comarca of the Rio Negro, in nine villas and thirty-eight hamlets:—free people, 17,881; slaves, 962=18,843.—Total of settled inhabitants in 1839, 149,854.

**DESCRIPTION**, by Mr. WEBSTER.—The great island MARAJÓ, which lies between the Rio Pará and the main stream of the Marañon or Amazon river, is a low flat alluvial land, covered with brushwood and grass, and abounding in cattle. This luxuriant island supplies Pará with cattle and horses. In the rainy season it is much flooded, and is peculiarly unhealthy when the waters have quitted it, and the sun begins to exhale the malaria. At this time remittent fevers prevail. It is overrun with alligators, snakes, and wild beasts.

The entrance of the Pará is about 25 miles broad. The land on every side of the river is low; but the eastern shore displays a boundless continuity of shade, and one uninterrupted scene of forest green skirting the water's edge, and extending with one level surface to the horizon. The water is extremely muddy, but tranquil, and without the heavy swell of the ocean.

The banks of the river are exceedingly muddy, affording but little facility for landing; and where they do allow of it, houses are generally erected. On the water are seen many thatched and cabined canoes of the country, and small river craft with lofty spindle masts and thin cotton sails, having some resemblance to Chinese vessels. It is not unusual to see them with a large mat, or a bush with all its leaves, to answer the purpose of a sail, in these canoes. The principal business of the river seems to be carried on in these canoes, which are continually arriving and sailing, and literally crowd the shore near the town. They bring the produce of the country from all parts, and come down the river from a distance of 600 and 700 miles. They are navigated by various native tribes, each canoe generally containing a whole family or more of people.

Captain Montravél says:—"Although this port, the only one in this province, is open to foreign vessels, and frequented by a very considerable number, it offers very few maritime resources. At the same time few ports require more to be provided with cordage, anchors, cables, and chains, which are so quickly destroyed in this climate, and which are so frequently lost.

"Provisions, also, are procured with difficulty, and are of bad quality. The water of the river, good during a portion of the year, becomes unwholesome and dangerous during the months of July, August, and September. Ships are then obliged to provide themselves with this necessary element, by their own means, with infinite trouble and loss of time, by artificial wells, dry at half tide, in the beach of San Antonio, and destroyed by the following tide. Vessels there should not reckon, but with great reserve, upon the resources of this port."

#### SAILING DIRECTIONS FOR PARÁ.

**MARANHÃO TO PARÁ.**—In proceeding from Itacolomi, whether to the North or to Pará, the route is the same to the Isles of San João. Being 12 miles from Itacolomi you will run N.N.W., and, until you come to the meridian of Point Atins, you will find deep water. The limit of 8 fathoms will be attained on this parallel: you must always keep in a greater depth than this, and you will have nothing to fear; if you find less, you must bear off from the coast.



It must not be forgotten that the flood tide runs W.S.W. at  $2\frac{1}{2}$  miles at spring, or 2 miles at ordinary tides, and at a greater rate nearer the shore; the ebb runs to N.E. at the same rate. Should you be becalmed you must not drift by the flood into less than 6 fathoms; if so, you must anchor. On the track here stated you will constantly find the bottom of white sand.

Having run 60 miles on this direction you will be 14 miles off, and on the parallel of the Isles of San João; as you approach them the quality of the bottom changes to yellow sand, mixed with red specks.

If it is during daylight, you will have seen the Islands of San João, the largest of which appears as a white triangle, fronted by small hummocks covered with vegetation, which, at a distance, seem like islands before the sand. They cannot be mistaken for any other part of the coast; and, having made them, you have nothing to fear from the Bank of Manoel Luiz, and can bear to the N.N.W., if going northward, or W.N.W., if to Pará.

If, after running 60 miles N.N.W. from Itacolomi, the land is not visible, either on account of night or haze, you will know that you are on the flat of San João if, having 8 fathoms, you have yellow sand. Continuing the route you will have crossed the flat, when you find a sudden increase of depth from 8 to 16 and 18 fathoms; and a change in the quality of the soundings, which become grey sand, with black specks, and sometimes mixed with broken shells.\* Having arrived on this edge you can run N.N.W. without danger; and, if bound to Pará, for the sake of security run some miles further N.N.W.: then bear round W.N.W.; and, if it is night, keep between the depths of 10 and 13 fathoms; but, by day, you can approach the coast and keep it in sight in 8 fathoms. To this depth the soundings decrease regularly, but below this they are irregular.

By daylight, in crossing the Bay of Pirucaua in 8 and 10 fathoms, you may see the Morro Pirucaua, page 81, and, keeping on in the same depth, you will cross the Bay of Praia, which may be known by the Sumacas Islands, if you cannot see the three hills at the bottom of Gurupi Bay, page 81. Between the San João Islands and Cape Gurupi the bottom is always of grey sand, with black specks; but on the meridian of this cape you will find the bottom of very fine black sand, the only bottom of the kind on the coast, and which serves the pilots to fix their longitude. Very soon after the bottom again becomes grey sand and black specks.

Having again certified your situation, you keep on in the same bearing and depth till you make the northernmost island of the Caíte group, described in page 82, and may be known by that description. The lead will also indicate the meridian of Caíte Bay; for, across the bay, the bottom is grey sand and broken shells; sometimes the lead only shows the prints of large shells, of which the bottom is full. Across the middle of the bay is a line of mud, lying S.S.W. and N.N.E. You ought to keep in 10 fathoms here, which will be 8 miles off the coast.

The bearing of W.  $\frac{1}{2}$  N. will then bring you up to Point Carro do Mato, page 82, then the sandy downs of Salinas Falsas Bay; and, at last, Point Atalaia, which you may approach without danger, so that you keep in 8 fathoms and 3 miles off.

The tides in all this coast are felt at 20 miles off; near the land, where they are strongest, the flood runs into the bays, that is, to S.S.W., at the rate of  $1\frac{1}{2}$  and 2 miles; the ebb to E.N.E. at three-quarters to one mile an hour.

**POINT ATALAIA TO PARA'.**—When you have well made out Point Atalaia, you may approach it within less than 3, and more than 2 miles, if you pass within the sandbank lying N.N.W. of the point. You will have made out Salinas before reaching the meridian of Point Atalaia. If you mean to go outside this flat, as is most prudent for a large vessel to do, you must not come nearer than within 6 miles of the point, and than in 11 fathoms.

A vessel wanting a pilot for the river can cast anchor in the muddy channel inside the shoal, having Point Atalaia bearing S.S.E.  $\frac{1}{2}$  E., and the village S.S.W.  $\frac{1}{2}$  W., where you have less chance of losing your anchor than outside in 11 fathoms.

I would advise every vessel to wait for the pilot under sail, whichever way the wind may be; you can always keep the village in sight, by tacking so as to neutralize the effect of the currents, which you can also do under shortened stay.†

\* Lieut. de Kerhallet says: "Black gravel, mixed with small shells, the only soundings of the sort on the coast," p. 18.

† If it is necessary to send a boat ashore for the pilot, it should leave the ship so as to be at the mouth of the little river, on the W. of which stands the village of Salinas, with two-thirds of the flood.

The pilot signals, as published by authority, in February, 1843, are as follow:—\*

1st. Every vessel arriving off Salinas, either foreign or native, will hoist a *red flag*, on any part of the rigging, so that it may be seen from the land, with the exception of the peak or the gaff-end of the mizen.

2nd. At Salinas, or the pilot station, there will always be hoisted, during the day, a *white flag*, which only serves to indicate the residence of the pilots there.

3rd. The same white flag, accompanied by a *red* one, with a white square in the middle, hoisted on either the right or left side, is to say that there is a pilot on the station, and that he has a boat.

4th. After this signal there will follow the one to indicate to the vessel the time the pilot can go off, and for this reason the persons on board ought to pay the greatest attention; therefore, if from the shore a white *burgee* (or *pendant*) with *red cross*, is hoisted, it is to indicate that the vessel must await the pilot, who will go off immediately; but if, instead of the white pendant with red cross, a *red* one be hoisted, it is to inform the vessel that it is not a proper time to go off, but that the vessel must be kept under easy sail, or lay-to at sea with the ebb, and in-shore with the flood tide, so as to be near the shore at high water, which the masters must bear in mind takes place at half-past one or two o'clock at new moon, and at full; in-shore at half-past seven to eight *a.m.*, and at half-past seven to eight *p.m.*; at the quarters of the moon, at twelve to half-past in the day, and the same at night; and it is only at high water that the pilot can go off.

5th. If the signals are made before mid-day, and if, after the signal for waiting is made, *two pendants* are hoisted, red above and white with red cross below, it is to inform the vessel that the pilot will go off before twelve o'clock. If the white pendant, with red cross, is above and the red underneath, he can go off only after twelve o'clock.

6th. If the signals are made in the afternoon, the red flag intimates that the pilot will go off before midnight; if the white flag with red cross is hoisted, after midnight. Respecting the fires that were lit at night to indicate that there was a pilot but no boat, and that there was neither, this practice is annulled, in consequence of the vessel that is now getting ready, and to be constantly kept at the orders of the pilots at Salinas.

After having embarked the pilot, if you are in less than 11 fathoms, keep to the N.W. until you are in this depth, and keep so by going W. by N., which will carry you along the coast 5 miles off, as far as Point Cajetuba, page 83, when the land bears away to the South. On this bank there is nothing to fear as far as the meridian of *Point Curuça*, the importance of which we have previously shown, page 83.

## ROUTES FOR ENTERING THE RIVER BY THE PASSAGE DE DENTRO.

1st. *When the breakers on the Bragança Bank are seen.* Having arrived in the meridian of Point Curuça, and only then, you will see to the W.S.W.  $\frac{1}{2}$  W. the breakers on the Bragança Bank, 7 miles off. A bearing taken now of the E. point of Cajetuba, and of the W. point of Tijoca, which you will see to the S.W.  $\frac{1}{2}$  S., with its characteristic sands, will fix the position of the vessel, and also show the previous effect of currents. If your course hitherto has been with a proper allowance for them, you may safely continue it, without danger from the flat extending E.N.E. from the Bragança, until you bring the sandy point of Tijoca to the S.  $\frac{1}{2}$  E. Then follow round the breakers, leaving them a mile eastward, until you bring the southernmost, (called Espadarte, page 84,) on with point Tijoca, bearing S.E. Then, place the vessel's head to S.W.  $\frac{1}{2}$  S., and this will carry you in 12 and 10 fathoms in the channel to 10, 7, and 6 fathoms.

2nd. *When the Bragança Bank does not show.* If you cannot make out the breakers on this bank, either because of a calm sea, or the tide too high, or that the sun is too low in the West,† then the bearings taken of Point Curuça, as first mentioned, become the first point of departure, and you must steer as before stated. If the bearings place you 8 miles from the point, you will pass on in 13 fathoms, which, at some casts, decreases to 10 and 9, and then falls again to 13 fathoms.

The sea breaks heavily on the bar, and there is great danger in attempting it at any other time of tide; she should not attempt to leave after the first third of the ebb tide.

\* In the *Nautical Magazine* these are erroneously given as Directions for Maranham.

† If the sun is low in the West, and its rays prevent these breakers from being seen, the coloured glasses of the sextant may be used to make out the passage.—*M. Arnoux Dessauls* says.



If, before bringing Point Tijoca to bear S., you find less than 8 fathoms, you are too near the N.E. side of the Bragança, and you must bear away to the North, and keep on the required route until the point is to the S. Then you ought to mark the W. face of the bank, and steer S.W.  $\frac{1}{2}$  W. with the ebb, and S.W. with the flood tide, to pass at the same distance as we have stated previously. It will, perhaps, be more prudent to run to the W. after being on the meridian of Point Tijoca, until it bears S. by E., when you will have 12 and 13 fathoms. Then steer S.S.W.  $\frac{3}{4}$  W. with the ebb, and S.S.W.  $\frac{1}{4}$  W. with the flood, in 11  $\frac{1}{2}$  to 13 fathoms, until Point Tijoca bears S.E. But, if you find less than 9 fathoms, the lands of Tijoca being distant, and the islets Rasa and Ratos, page 86, out of sight, it will show that you are too near the Tijoca Bank. If the islets Rasa and Ratos are open only a sail's breadth, and you find less than 9 fathoms, open your eyes and bear quickly to the S., for you will be on the edge of Cabeça do Sol of the Tijoca Bank, page 86.

If the islets are well open, and bearing to the W. of S., and at the same time the land of Tijoca is very distinct, and the depth diminishing, you will be too near the Bragança, and you must bear to the westward. These directions are, doubtless, minute; but they will prove useful in case the breakers on Bragança do not show, which is exceedingly seldom, or when the pilots, which is too often the case, are ignorant and incapable. It is not advisable to enter the channel during the night and in a calm. It will be better to anchor before reaching it, although you have the chance of losing your anchor, where they sometimes break like glass, without any possibility of assigning a cause. You ought, therefore, to cast anchor here, and in all parts of the river, most carefully and not quickly, and only veer out the cable as necessary.

It is high water (establishment of the port) in the Channel de Dentro at 10 h. 51 m. in the western part, and the rise is 9  $\frac{3}{4}$  feet. The flood runs to S.W.  $\frac{1}{4}$  S. 2  $\frac{1}{2}$  miles to 3  $\frac{1}{2}$  miles. The ebb runs to the N.E. with the same mean rate. The bottom throughout is fine grey sand.

**THE CHANNEL DOS POÇOENS.**—If, by any cause, you should be driven into the Poço, lying between the Bragança Bank and the lands of Curuça and Tijoca, you may proceed without fear as follows:—

If you have entered the Poço with the flood, it is most likely that you are nearer the Bragança than the coast, which a bearing will quickly decide. You must then get nearer the land, where there is less depth, the currents weaker, and the sea quieter than in the W. part of the Poço; you can approach it without danger to within 2 miles in 7 fathoms. Being in this depth, and as near as possible in the line, with Point Tijoca bearing S.E., you must anchor and await the ebb until next day, if the next ebb tide occurs after three hours afternoon; that is to say, with the sun at a less elevation than 45° in the West. You may leave, however, with the next ebb, if you wish to enter the Pass de Dentro by the North, when you may beat out of the channel, preferring the eastern part of it. Point Tijoca bearing S.  $\frac{3}{4}$  W. marks the E. limits of the N.E. side of the Bragança Bank.

If you intend entering the Channel de Dentro by the Channel dos Poçoens you must get under way when the sea permits, and get on the bearing of Point Tijoca to the S.E., and then run N.W. more to the N. or W., according as you were to the S. or N. of the bearing given from Point Tijoca, but preferring to keep to northward.

You will soon see, particularly with the ebb, the breakers on the Espadarte of the Bragança, which you must pass at half a mile or more. When they bear N. then steer W.S.W., and then you will be on the route stated above for going through the Dentro Channel, when you bring Point Taipu to bear South *true*.

In the Poço the current of the flood runs S.W., with a rate of 2  $\frac{1}{2}$  in common, and 3  $\frac{1}{2}$  to 4 miles in spring tides; the ebb in the opposite direction at the same rate. It will be understood that, with such currents, you ought not to venture in this passage but with a fresh breeze and settled weather.

Let us now return to our route in the river. As we have said, we have placed the vessel's head to the S.W.  $\frac{1}{2}$  S., when the Espadarte is on with Point Tijoca, bearing S.E. We shall have in this track 12 and 11 fathoms in the channel, to 10, 7, and 6 fathoms. You must always keep in 6 and 7 fathoms, until Point Carmo, page 86, bears East, 3  $\frac{1}{2}$  miles off. Then steer S.S.W.  $\frac{1}{2}$  W. as far as the parallel of Point Coçal, whence proceed so as to pass 1  $\frac{1}{2}$  mile West of Guaribas Islet. If, before you reach the parallel of Pombas Isle, the depth should exceed 8 fathoms, you are too far to the W., and must bear to port, for fear of being carried too near the Morisoca and Croa Secca Banks.

South of Pombas Island the depth increases to 9 and 11 fathoms, as far as the parallel



of Guaribas Island, where it varies between 13 and 16 fathoms, rocky bottom, to that of Point Chapeo Virado, when it again becomes 9 and 11 fathoms, as far as Point Musqueiro.

When, on this track, you have brought Guaribas Island to bear N.E. by E., and Point Musqueiro S. by E.  $\frac{1}{4}$  E., you will have passed the rocky flat, the end of which lies to the N. of Point Chapeo Virado. You must then steer so as to range a mile or more around Point Musqueiro, whence you may run for Point Pinheiro, which you will see to the South, taking into account the effect of the wind and the flood tide, which bears upon the islands to leeward. You must pass nearly half a mile from Point Pinheiro, to avoid a rock which lies 2 cables' length W.S.W. of it, and, when you have doubled it, you must run along the coast, until you see, through the cut to the South of the island Paqueta Mirim, the islet which is to the North of Arapiranga, on which line lies the North extremity of the bank which extends to the N. of Ilha Nova. Then steer so as to pass a short distance from the Forte da Barra, which you must not near on the N. on account of a rock lying a cable's length off on that direction.

From the Forte da Barra proceed toward the city, but do not bring the cathedral and fort in a line, on account of two banks on this bearing abreast of Val de Caens. You ought also, if the breeze is slight, to guard against the stream of flood which runs rapidly to the S.W., between the house at the mouth of the river Una and the point of the city. The bearing used by the pilots, to show the edge of the bank extending from the anchorage to Fortin Island, is the West angle of the hospital (a white house standing on the W. point of the city) on with the church of Carmes, in the S.W. of the city. You will anchor in  $3\frac{1}{2}$  fathoms between the church of San Antonio, at the N. end of the city, and that of Merces, lying in the centre.

**DIRECTIONS FOR LEAVING THE RIVER.**—It is a custom among vessels here, by the advice of the pilots, to quit the river only at the moon's quarters. The only plausible reason that can be given for this is, that you can leave in the morning, that is, before the sea breeze sets in: but I would rather have, for the first tide, the advantage of the greater strength of the current, than a favourable wind, which is less important. Therefore, the age of the moon appears to me to be indifferent, and I would advise the abandonment of this prejudice.

You must be ready at high water, and tack down as far as the Bar Fort in the channel limited on the East by the cathedral and fort in one, and on the West by the hospital and the Carmes church, (as described for entering,) that is, in  $4\frac{1}{2}$  fathoms, if it is a large vessel, and in  $3\frac{1}{2}$  if of light draught. When you have passed to the northward of the bank of Ilha Nova, that is, when the islet North of Arapiranga is seen through the cut, you push your boards as far towards the islands as in  $4\frac{1}{2}$  and 5 fathoms. By tacking thus during the whole ebb tide you will most likely reach Point Musqueiro before the flood, or at least some point S. of San Antonio Bay. If you find that you cannot, before the end of the ebb, reach the parallel of Pombas Island, you should not try to pass Point Musqueiro, as you would be obliged to anchor in deep water and rocky bottom, and be exposed to the full force of the flood tide.

The second tide, being in the night, you must proceed with caution in the channel between the Musqueiro coast and Tatuoca Island, and the rocky bank North of this island. When you are North of Point Musqueiro you are beyond the limits of this latter, and can lengthen your tacks to W. through the successive depths of  $11\frac{1}{2}$ ,  $12\frac{1}{2}$ , and 15 fathoms, where they drop to 11 fathoms. Then proceed on the starboard tack as far as 9 fathoms. Going thus you will near the Croa Secca, but, as the lead will not sufficiently indicate this, you must be careful in the night to W. By day, while to the S. of Point Marrau, the meridian of the W. side of Goujetuba Island ought to be your western limit, and to the N. of the same, and S. of Point Cocal, you should not bring Point Chapeo Virado to the East of South. The lead will be sufficient guide to eastward.

The currents are weaker towards the shore, which, therefore, ought to be avoided.

The second tide will carry you probably to somewhere between Colares and Cape Carmo. The best anchorage will be E. of Point Cocal in 5 and 6 fathoms, or between Carmo and the ledge of rocks of Colares, as near the land as possible in muddy bottom. The pilots are accustomed to anchor in the middle of the river, but it is much better as near as possible to the land, where you avoid the force of the currents.

The third ebb will most likely take you as far as the point of departure for the entrances, of which we have previously spoken, on the entering of the river. Your tacks during this tide must be guided by the lead and the distance of the land, except on the edge of the

Correio Bank. As long as the Islet Caramoju, in the mouth of the river De Vigia, is covered by Point Arequesão, you will keep clear of it by not passing the meridian of Cape Carmo. As soon as the islet is open to the point, the edge of the bank will be with Cape Carmo S. W. by S.  $\frac{1}{4}$  S., which bearings you must not pass. The western limits are the soundings, and the seeing the land, which you must not lose sight of.

With Point Taipu bearing S.E. by S. 4 miles, you will be in a good situation for passing the entrances, of which you have the choice of that of the Dentro, and that between the Tijoca Bank and the Santa Rosa Bank, through the central shoals.

The first is preferred by vessels drawing above 16 feet, and the other by those of less draught.

LEAVING BY THE DENTRO CHANNEL.—You must wait for daylight, and get ready by the time of high water, and then run to N.W., but not so far as to lose sight of the land of Tijoca; then veer to E., the limit of which tack will be N. and S. of Point Taipu, so long as Point Tijoca bears S. of S. by E., or, better still, while the islets Ratos and Rasa are not open of each other. In the second tack to N.W. you must not pass to N. of the parallel of the Espadarte shoals, or Point Tijoca, bearing S.E. by E.  $\frac{1}{4}$  E. On the next tack to E. you will, most likely, double the extreme of the Coroa Nova, and you may then run to the meridian of the Ratos and Rasa. The third tack to N.W. must be limited to 7 fathoms, and Espardarte bearing East *true*. North of this last bearing you must shorten your tacks to the N.W., and go not beyond 7 fathoms and eastward to half a mile from the Bragança breakers.

The most dangerous point in this passage is the Cabeça do Sul de Tijoca, which lies, as before stated, with Rasa and Ratos open a sail's breadth, and Point Tijoca bearing S.E.  $\frac{1}{2}$  E.; these two bearings should never be brought on at one time: tacking, as we have stated, you will get out, if not easily, without danger.

You may also leave the river by the *Channel dos Poçoens*. After having brought the Espadarte on with Point Tijoca, and the wind will allow you to follow this bearing of S.E., you may enter the channel, ranging round the Espadarte, and steer S.E., having passed it. Run the East board to near the bank off the coast, and then tack in the Poço, preferring to beat in the E. part of the channel. This new passage is shorter and more easy than the Dentro, but it requires a good wind, which will allow the head to stand S.E. It is excellently adapted for steam vessels bound eastward.

LEAVING BY THE WESTERN PASSAGE, CALLED THE NORTH CHANNEL.—This channel, taken by vessels drawing under 16 feet, has no danger for such throughout, except the Adonis Bank, in its western part.

Leaving the anchorage of Taipu at the end of the flood, you steer N. by W., the ebb running N.E., 2 knots will make your course North, and on this you have nothing to fear from the Adonis. If you find (out of sight of land), having had 5 to 8 fathoms, a depth of  $3\frac{1}{2}$  fathoms, you have come on the Monjui Bank, when you must go more to the W. and reach 5 and 8 fathoms. If the wind does not allow you to stand N. by W. you may come upon the San João Bank, on which there is never less than  $3\frac{1}{2}$  fathoms, and, therefore, not dangerous.

The navigation of this part of the entrance, with a strong beating wind, cannot be guided by any positive indications, if you are out of sight of land, and the lead will not tell the proximity of any of the banks you wish to avoid: but by keeping in the eastern part of it, to the East of the bearing of Taipu to S.  $\frac{1}{2}$  W., you have nothing to fear. If, with Cape Magoari in sight from the masthead you find soundings of 3 fathoms, you are on the Adonis Bank, and you must then take a short tack to E. If it is in sight from the deck, and less than  $5\frac{1}{2}$  fathoms, you must bear to the eastward. In general you will be too near the Santa Rosa Banks, if you can distinctly see Cape Magoari.

The Monjui Bank is readily known by the rapid diminution of the depth, and, when you find the soundings increase on the N. side, you are outside the river. As soon as you have reached this the bottom, which hitherto has been of grey sand, becomes of soft mud.

If there is but little wind, and the ebb nearly done, it will be prudent to anchor on this muddy bottom, to prevent being carried to W. by the flood; but with a fresh breeze you can proceed safely in not less than 7 fathoms.

*Remarks and Directions, by Captain the Hon. Wm. Wellesley, 1833.*

ON PROCEEDING FROM MARANHAM, for the coast to the westward, the courses are North and N. by W., until nearly on the parallel of the Island *St. João*, or *St. John*; thence hauling to the westward, the eastern part may be made. This land may be known by a small white patch of exactly the same colour as the *Lançoes Grandes*. It is very remarkable; for the surrounding country has verdure about it, and the sand is whiter, and has altogether a different appearance. At these *Lançoes* is a narrow passage between *St. João* and the main.

On continuing westward you lose sight of the *Lançoes*, and approach the eastern point of the isle, which is low and sandy. A shoal extends from it, which always breaks. This may be rounded in 9 or 10 fathoms. On approaching it, over the sandy ground, a green and woody point appears, which has a peculiar shape, from the trees at its extremity being withered or stunted. It may seem, at first sight, as if a mist were coming over the land. This should be known, because a certain sight of this point is requisite in order to take up a good anchorage. It should not be brought to the southward of East, and you should not open a river, the entrance of which is just to the southward of it. But a most preferable anchorage is found by rounding the breakers in 10 fathoms, then anchoring at about a mile from shore, in not less than 8 fathoms, and moderately close to them.

It is to be remembered that navigators who are making the coast, and those who are leaving Maranhão for the westward, should take three or four days after the full and change of the moon for the time of starting; as spring tides run very strong, about four miles an hour. The *Sapphire* happened to enter the anchorage during their greatest strength, and upon the flood. Many of the shoals show only upon the ebb. The ship was driven upon their edge, and anchored in 7 fathoms, in a position presumed to be safe; but, when the tide turned, breakers were discovered within twenty yards, and had not then the wind and tide been favourable, she might not have gotten clear without difficulty. To anchor at *St. João*, take, if possible, the ebb tide and quartering of the moon.

At a hut to the southward of *St. João* dwells a Brazilian, who has the charge of cattle, the proprietor of which lives on the main land. Here fresh beef may be procured in abundance. The best landing is just round the South point. You may also land at Woody Point, and cut fuel; but, if you remain there during the flood, you will hardly pull through the entrance of the river, the tide runs in so violently.

Between *St. John's* and *Salina*, a distance of about 50 leagues, the land is low.

From off *St. John's* the *Sapphire* steered N.W. by N. and N.W. until she had passed Cape Guarapi, which lies in latitude  $0^{\circ} 41'$ . The bay on the West of this cape is said to be not so deep as laid down in the charts, and vessels anchor mostly off the shoals. There are commonly a number of troops at Guarapi, and sometimes a Brazilian man-of-war. According to report there are diamond mines in the neighbourhood.

A good depth to run along the coast in, well off the land, is from 13 to 15 fathoms. Farther inward the depths decrease very gradually to 12, 11, and 10 fathoms.

POINT ATASIA [*Atalaya Point*] is 25 leagues to the westward of Cape Guarapi. On passing between, Captain Wellesley has said, Until I arrived at *Mount Atasia*, the only points I distinctly made out were *Caíta*, which is a long low green point, and *Mount Pirausou*, which may be known by the red cliffs about it; but you must be pretty close in to make the red out clearly. The directions in an old book say that *Mount Atasia* has a watchtower upon it, with a gun, which is sometimes fired when a vessel is seen approaching. (This is still there, though its existence has been denied.)

*Mount Atasia* is rather a high point, with reference to the land around it: there are two or three remarkable patches of land on it; and from the eastward it makes very distinctly; as the point and white patches cannot be mistaken.

SALINAS, or *SALINA*, the pilots' station, is difficult to make out at 5 or 6 miles from shore; but as you open the land to the westward of *Atasia*, on looking carefully, a small white house will be discovered, with a red streak behind it. The white house is the chapel, and the red, the tiled roofs of the cottages. It stands upon the ground rather more green than the surrounding country, and makes best on coming more directly from the northward, the whole village presenting a more enlarged appearance.

The best anchoring ground off this point is with the village bearing from S. by E. to S.E. by E., in from 7 to 13 fathoms of water. The *Sapphire* anchored with it bearing S. by W.



in 7 fathoms, off a spit which runs from Point Atasia; but here the ground was found to be foul.\*

In sending a boat ashore, the best passage in is between two breakers, a little to the westward of the village: opposite to it is a very heavy surf.

Captain Courtney, R.N., has represented the bottom, along the whole line of coast, as being composed of quicksands, to which he attributes the frequent loss of anchors. Lieut. Stopford, who has frequently anchored on all parts of the coast between Maranh and Pará, is, however, of a different opinion, but he admits that the quality of the bottom should always be ascertained before anchoring, because it is foul in many places.

*Remarks made between Maranh and Pará, by Lieutenant Stopford,  
Commander of H.M. Sch. Pickle, 1832.*

A vessel bound from Maranh to Pará, during the rainy season, should get to the northward of the Equator as soon as possible: for she will thus avoid the light baffling winds and calms which prevail in this season; and also the current which sets from E.N.E. to S.E., about two or three miles an hour, augmented by the water from the various rivers and bays of the coast.

*Westward of the Island of Salina* are some white cliffs, so nearly resembling those to the eastward of that island, that they have frequently been mistaken for each other; and some vessels, after mistaking the western cliffs for those eastward of Salina, have stood on until they have been lost on the Braganza Shoal, or in that equally dangerous place called the *Well*, on the East of the Braganza Bank. It is, therefore, indispensably necessary that due precautions be taken for anchoring at Salina. With the town S. by E. you anchor in 9 fathoms.

The whole coast from Turivazo is woody, and the white sandhills are very remarkable.

The *Pickle*, when off *Salina*, remained at anchor one night, in seven fathoms, with the town bearing S. by E., and had no difficulty in regaining her anchor in the morning.

Accidents have frequently happened here, and lives have been lost, by boats being swamped in the surf when going for pilots. To attempt landing immediately under the town is very wrong: boats should pass to the westward of the island; for, by entering thus, a river will be seen, which leads up to the town, and there, avoiding the surf outside, they may land in safety.

*Directions for Pará, by Mr. Rd. Thomas, Commander of the brig  
Margaret Richardson, of Glasgow.†*

When bound to Pará from the northward vessels should cross the Equator in 46° W., then steer S. W. until they arrive in 28 minutes of South latitude: soundings may then be found in 17 and 20 fathoms; fine sand with small black specks. Steer a West course from thence, keeping the lead going, and do not approach the shore nearer than in 12 fathoms of water. The white sandhills to the westward of the *Bay of Caiá* will soon be seen, appearing from the masthead like breakers, at the foot of high mangrove trees.

The land of *Caiá* must not be approached, for the water is very shallow, and the soundings very irregular off the bay, and the flood tide sets in to the West. By steering a West course, and keeping a good lookout, *Point Atasia* will soon be seen; it being the highest land on the coast from Mount Guarapi, with steep red cliffs at the end, and to the westward of it.

At about two miles farther to the westward is the village of *Salina*. The pilot station is situated on a steep cliff, and the houses covered with red tiles. A church, with the steeple, near the middle of the village, may be seen.

\* From 7 fathoms, bad ground, *Salina* bore S. by W.  $\frac{3}{4}$  W., Macussani, W.S.W., *Point Atasia* [Atalaya], nearly South. The best anchorage is with the pilots' station S.E. in from 9 to 13 fathoms, and not less than four miles from shore.

† The result of seventeen voyages. Originally given in the *Nautical Magazine*, 1833.

Abreast of this point, at the distance of about two miles, is a bank of hard sand and stones, with  $4\frac{1}{2}$ , 5, and 6 fathoms of water: this bank extends to the eastward as far as Caíta, and the West end bears South from Salina. Within this bank is a channel with 9, 10, and 11 fathoms of water, soft mud; but, being so near the shore, it is not recommended.

*After having reached the pilot station at Salina*, should the weather be fine, with light winds, it is advisable to anchor, with the village bearing S.E., and in not less than 9 fathoms of water. For, should it come to blow during the night, which is often the case in the rainy season, and a vessel should part her cable, she will have sufficient room to make sail, and stand to the northward under easy sail until morning, and by that means will avoid the reef which lies off the island *Praia Grande*, the island next West of Salina. Should it be blowing strong on arriving off the pilot station, and past noon, the best way may be to lie off and on, under easy sail until next morning, for it would be too late to attempt to run for the banks.

*In leaving Point Atasia for the Rio Pará* make sail early in the morning, steering W.N.W.  $\frac{1}{2}$  W., keep the lead going, and be very cautious in steering and sounding, as the tides here run very strong, and are very uncertain in their direction, owing to the many small rivers and banks in the vicinity. A vessel should not advance nearer than in 10 or 12 fathoms, until she comes abreast of *Maranduba*, by some called *False Salinas*. The latter is the second island westward of the village Salina, and may be known by two white patches or sandhills, in appearance resembling the sandhills to the eastward, but smaller.\* Having passed these sandhills continue a course toward the *Braganza Banks*, or breakers, still keeping the lead going.

Hence to the Banks, while in the fairway, from 13, 15, and 17 fathoms will be found; and, when the sandhills bear about S.E. by E., the breakers will be seen from the masthead on the larboard bow. These breakers must be left on the larboard hand, at the distance of about half a mile. The channel here, between the Braganza Banks and Tijoca Shoals on your starboard hand, is not two miles wide. Having reached the breakers, the only guide for entering the river, a vessel may steer a little more southerly, keeping the lead going; for she will then have, in mid-channel, 15 fathoms of water, with foul ground. Having advanced well round the breakers the course thence up the river will be S.W.  $\frac{1}{2}$  S., keeping the larboard shore on board.

### *Directions for making Pará, by M. Arnous Dessaulsays, 1822.†*

Vessels coming from Europe ought to direct their course so as to cross the line between  $42^{\circ} 40'$  and  $44\frac{1}{2}^{\circ}$  W. long. They can, within these limits, choose their passage, on account of the confidence they may be authorized to have in their position. By reckoning, the easterly point is to be preferred; with chronometers, a more westerly point may be taken. As soon as the line is crossed, the latitude of  $0^{\circ} 24'$ , or  $0^{\circ} 30'$  S. is to be attained.

Under the line, between  $44^{\circ} 40'$ , and  $46^{\circ} 30'$  W., the soundings decrease gradually from 70 fathoms to 16 or 13 fathoms.

Under the parallel of  $0^{\circ} 30'$  S., between the same longitudes, the depth decreases from 18 to 11 fathoms, and the land ought to be made before the first depth is attained, or at least it is then to be seen. As soon as this is made out you can approach into 7 fathoms; but this is the limit, on account of the numerous shoals. There is nothing to fear from banks of very light, reddish sand, which are met with from time to time.

In running to the W., under the parallel of  $0^{\circ} 24'$  to  $0^{\circ} 30'$  S., the land will show as a series of promontories, running out into the sea. As you advance, fresh points discover themselves in the same manner, and when these are seen abreast they appear to be narrow, and the sea seems to break at their feet; the flat sandy shore frequently augmenting this appearance.

Great attention ought to be directed to the first land that comes in view. Cape Guarapi,

\* These two sandhills have, at times, been mistaken by strangers, and have proved fatal to many valuable lives, there being no landing in their vicinity. It was off this place that Captain Mann, of the brig *Warrior*, in 1827, unfortunately lost his mate and three men, by the swamping of a jolly-boat, when attempting to reach the shore in search of a pilot.

† These directions are taken from the "Instructions pour la Navigation aux Attéragés et dans la Rivière de Pará," as above.

which is one of the first to be seen, is also one of the most northern on the coast. It is easy to be known by a decided mount, situated in the lands at a little distance from the advanced point. The breakers at this point are real and apparent. It is a good point to recognise, because the route may be correctly estimated from it, to arrive readily at Salinas, which is 35 leagues to the W.,  $5^{\circ}$  N. The reckoning may be then made for the night, and there will be no necessity to anchor; but care must be taken to keep at a distance of 10 miles from the land during the night, and not to have a less depth than from 12 to 14 fathoms.

To the eastward of this cape the land is all more southerly, and only one other point, 25 miles to the W., is nearly on the same parallel. These two places are the only ones that project so far to the North, on more than twenty leagues of this coast.

Should this not be made out, you must anchor for the night. During the day run along the coast, paying attention not to come into less water than 7 or 9 fathoms. The land extending to the West consists of flats of sand, covered with wood, separated at distances by sandy tracts. The uniform aspect of these woods resembles a plantation. The shore thus continues to Caíta, lying 20 leagues to the West of Guarapi.

The RIVER CAÍTA has on its western shore, in the interior, a village, which cannot be seen from the sea; and there are also, at its mouth, several islets, which are difficult to make out. A chain of hills and downs of white sand commence at the West point, and continue in an E.S.E. and W.N.W. direction for a length of 25 miles; there are islets and breakers at the foot of these downs, in front of the shore, from this point as far as Cape Atalaya, or Atasia, where these sands are more of a reddish colour. There are some woods which show themselves within the land: this is necessary to be known. The rocky and moderately high point, which is met with after these sandhills, is Cape Atasia, or Atalaya; it is edged with rocks, more or less uncovered. In its neighbourhood the water is deeper near the land, and, therefore, it can be approached closer than the preceding coast. It is the most northern point that is met with after the sandhills we have spoken of. Salinas is 4 or 5 miles from them, a little to the S. of West.

This cape is a mile more to the North than Salinas; the land ought to be neared to within 7 or 9 fathoms, and then seek, in the slight indentation which the coast forms to the West of this point, for the village of SALINAS, which is the only one which can be found on the whole extent of this coast.

The land at Salinas is higher than that which is passed before it. About halfway up on this land there may be seen, with the aid of the glass, a village, of which the left hand part is composed of houses covered with greyish shingles; those on the right hand are covered with reddish tiles. Nearly in the middle is a house which is higher than the others, covered with white plaster, which sometimes appears grey when the plaster is old; it is the pilot's house; there may also be distinguished a small church and a cross.

In looking towards the right of this village the land presents the appearance of three bands of different shades of colour, which is formed by the summits of three ranges of hills, of which the tint is more feeble, according as they are more or less distant in the interior.

When arrived to the North of Salinas you must anchor, and wait for a pilot.

From this anchorage may be perceived the Point of Cajetuba to the West, which seems to be confounded with that of Tigioca. That of Marapani rests to the S.W., and Miranduba to the S.W.  $5^{\circ}$  W. The mouths of the different rivers leave tolerably large lagoons between these different lands.

ANTILLAS, &c., TO PARA'.—Vessels coming from the Antillas or Cayenne, and which are going to Pará, are then obliged to proceed to the eastward, in order to be able afterwards to come southward; and then may be classed with vessels coming from the North.

Those who would make for Salinas must conform to the directions before given for finding that place. But as sometimes there may be some uncertainty as to the position in longitude, it is necessary for them to observe, that if, in crossing the line, they should find more than 20 fathoms water, and being sure of their latitude, they may be certain that they are to the East of Salinas, and then they can make for the land.

If there should be found only 18 or 14 fathoms under the line, great attention should be paid; you are then between the two directions of N.E. and N.N.W., from Salinas. This last position, more particularly, would lead too near to the banks at the entrance of the passages, and the currents of the flood tide would make the nearing of them very dangerous. Should you, however, make for Salinas, you must keep on the northern tack, and make for



the eastward, so as not to come to the land until you have, at the point indicated, at least 18 fathoms water.

### *Observations on the River Pará, and the Mouth of the Amazons.\**

"I have recently heard of another boat's crew to be added to the many previous lives lost at Point Salinas, the pilot station at the mouth of the Amazons; and having had myself, not long ago, nearly occasion to deplore the same misfortune, I think that captains of ships should be warned of the great hazard incurred by despatching a boat there to procure a pilot.

"The vessel I allude to, or to which the boat belonged, was an English schooner, a small vessel and with few hands; so that the captain and boy were all that were left of a crew after the unfortunate event took place.

"In my own case I anchored with the pilots' houses bearing S. by E., and sent the chief mate on shore with four hands in order to procure a pilot. They returned at midnight much exhausted, and the object of their mission unaccomplished. They effected a landing with much difficulty, but not near the station; and, in returning through the surf, shipped a sea, and nearly swamped the boat, and had she not been a very lively one, and fitted with air-tight lockers, she must have gone down. Before I would again risk a boat I should weigh and proceed for the river, following Captain Richardson's directions, but I could hardly recommend them to a stranger.

"The pilot signals mentioned by Lieutenant Stopford are still in requisition; his, Captains Wellesley's and Richardson's remarks on the river are clear and concise. I consider Salinas rather a difficult landfall to hit, but the remark that a small white house will be seen (appearing like a speck) with a 'red streak' behind it, is most graphic, and is exactly as it makes. The existence of a tower on Point Atasia, which has so often been doubted, is certain, it being for half an hour distinctly visible to us: it is a low quadrangular building with apparently a thatched roof, but, when a ship is near enough to make out this, she is in dangerous soundings, and ought immediately to haul off. Ours shoaled suddenly to  $4\frac{1}{2}$  fathoms, varying nearly 2 fathoms every alternate cast.

"The pilot, having to collect his boat's crew from the country, does not come off immediately on a ship making her appearance; ours came on board twenty hours after bringing up. The Salinas pilots are ignorant and unskilful, they never take a ship down the river. A captain would, therefore, require to look after them, and, if under way at night, the lead-line to be hove occasionally; a fortunate cast of it saved us from running on a bank, the pilot imagining he was in the fairway and steering a course accordingly.

"Norie's chart of the river, though universally used by all traders, is not entirely correct; but a French man-of-war brig has lately made an excellent survey of it, and discovered a passage through the Pozo, the shallowest soundings 9 fathoms. I could not ascertain the bearings of any objects to 'guy' a ship through this channel, and indeed from the uniform appearance of the land they would be of little use to a stranger.† Lieut. Stopford remarks that most of the losses that have occurred at the mouth of the Amazons have taken place here. I should recommend a ship, should she unfortunately run past Salinas and fall to leeward of the Braganza, to anchor, and send her boat to sound a passage; but a Brazilian who resides in the neighbourhood, a man advanced in years, and in easy circumstances, is generally philanthropic enough to board a vessel when he perceives she has got on the Pozo, and to conduct her to Pará. He has been the means, I am informed, of averting many losses. A ship is deemed fortunate to get up the river without the loss of an anchor; this I am inclined to attribute more to the injudicious method of weighing than to either the nature of the bottom or swell, for instead of canting the ship with the yards and head sails, only top sails and top-gallant sails are set in the face of a strong trade, which, with the heavy swell, brings an altogether unnecessary strain on the cable, provided the ship has come to in a proper berth.

"At Pará merchant ships ought to moor very close in, or immense difficulty will be experienced in getting the lighters backwards and forwards; exertions ought to be used to have them discharged before 2 p.m., as, during twenty-one days' stay in the river, the rain

\* From the *Nautical Magazine*, Oct. 1846, p. 505.

† This passage alludes to the survey of Captain *de Montravel*, which is given on our chart, and the description and directions by the same officer are in the preceding pages.

commenced daily in torrents about that time, accompanied by the most magnificent lightning.

"The inhabitants of Pará, who are extremely hospitable, more so than I have found them in the other Brazilian cities, esteem it a very healthy place; there Europeans attain a great age. The enormous falls of rain serve to cool the atmosphere, and prevent the waters from stagnating, which they otherwise would do, owing to the flatness of the country; but the mighty Amazon never inundates its verdant banks, but flows on in silent majesty, undisturbed by the outpouring of the clouds, or the swellings of its tributary streams.

"Pará has not yet recovered the heavy shock it sustained from the revolution, and English establishments, then broken up, have not again been formed; but its position, both in a commercial and political point of view, is admirable, from its being the only seaport on the largest river in the world, the only emporium for the increasing wants of the vast and imperfectly known countries washed by its tributaries.

"The other entrance to the Amazon is subject to a strong 'perioroca,' or bore, every full and change. The contracted policy of the Brazilian government forbids ships of any nation whatever, except their own, from ascending the river above Pará, at once checking enterprise, impeding commerce, and constraining to lie rotting on the banks untold quantities of the country's produce, such as cocoa, anatto, and castanios, &c., indigenous and growing wild; a very small proportion of which is brought down to Pará, and there exchanged for gunpowder and salt. The voyage \* undertaken by the Indians, to procure salt alone, sometimes exceeds six months, with their decks in a constant wash with the water being so deeply laden, they experience difficulties on approaching the falls, sometimes having to land their cargo, and carry both it and the canoes across the country, and also launch them on the other side in deep water."

## SECTION IV.

### THE EASTERN COASTS OF BRASIL, ETC., FROM CAPE ST. ROQUE TO THE RIVER PLATA.

#### I.—THE COAST OF BRASIL, FROM CAPE ST. ROQUE TO PERNAMBUCO.

WE have already shown, in our former work, the Memoir on the Atlantic, that ships bound to India, and not intending to make the northern coast of Brasil, have frequently and unintentionally made the land near Cape St. Roque; that some have unexpectedly found themselves to the westward of Fernando Noronha, and that others have actually been wrecked on the Rocas, or low kays situate to the westward of that island. Of all these the reckonings had been deranged by the WESTERLY or EQUATORIAL CURRENTS, which are found to prevail in this part of the ocean.

For the Winds and Seasons on this coast, in general, see the present work, page 1. For the Tides, page 7. For the Currents, pages 8 and 9. For the passage to Brasil, page 11. For the Island of Fernando Noronha and the Rocas, pages 47, 49.

**The WEATHER, &c.**—The EASTERN COASTS OF BRASIL, being almost entirely within the torrid zone, South of the Equator, are subjected to the general high temperatures of the lower latitudes; but the great diversity in the equalities of the ground, in the mountainous part of the country, produces a variation in temperature. On the sea, near shore, the ordinary state of the air is at 75 to 77 degrees of Fahrenheit's thermometer, from March to September, and of 77° to 86°, toward noon, from September to March: but, in different places, the temperature is higher or lower, according to the localities; for instance, at the high town of *Bahia*, or *St. Salvador*, the mean expansion of the mercury has not been found, between September and January, in the warmest time of the year, higher than 75° in the morning, 79° at noon, and 76° in the evening. At *Pernambuco*, in the same season, (five degrees nearer the Line,) the thermometer has marked 83° to 84° toward noon, and risen,

\* The first voyage down the Amazons to Pará from Ramon in Bolivia by the Madeira river, and return to that place, with a cargo, has just been effected. It occupied a year and six months.

at times, to  $87^{\circ}$  : while at *Rio Janeiro*, nearly  $10$  degrees to the southward of *Bahia*, the prevailing heat is much greater, even at  $91^{\circ}$  to  $93^{\circ}$ . The difference is produced by the various heights and figure of the land.

In the southern provinces the winter is rather severe ; in the parallels of  $27\frac{1}{2}^{\circ}$  to  $32^{\circ}$ , or of the island of *Santa Catharina* and of the *Rio Grande de S. Pedro*, the snow falls abundantly on the high lands, and the hail, at times, greatly injures the plantations. More in the interior of the country, as the elevation of the land increases, so do the characteristics of winter.

The two seasons, dry and rainy, have already been described in page 4.

In reducing the seasons of the year to two divisions only we conform, says the Baron Roussin, to the usual expression : but the diversity of exposures, the vicinity of mountains, and the various degrees of elevation in the ground, produce many local exceptions to the weather generally prevalent. At *Rio Janeiro*, for example, it rains much more in the last months of the northern monsoon, which generally is the dry season, than during the rest of the year : in November to March there are frequent storms in the evening or at sunset, accompanied with thunder and heavy rain ; these are quickly succeeded by a clear sky and fine weather. The cause arises from the disposition of the mountains which form the *bassin* or valley of *Rio Janeiro*, and to the great heat which prevails in it from the sun's diurnal passage, toward and from the zenith.

By causes partly analagous, circumstances are similar at *St. Catharine's*, where storms and heavy rains have equally place during several months of the dry season ; but these anomalies are limited to certain places, and do not affect, on the coast, in general, the characteristics generally assigned.

It may therefore be said, in regard of Brasil, as of Europe, that the state of the weather depends on the situation of the sun in the ecliptic. In general, the weather is fine when the sun is in the hemisphere of the place ; the contrary cause produces an opposite effect.

The worst months of the rainy season are marked by frequent fogs, extreme and continual humidity, and very heavy rains, which often continue for ten or twelve hours consecutively ; and it has been remarked that, during the rainy season, the worst weather is at the time of new and full moon, more than at any other period.

It is at this time of the year that several maladies prevail, occasioned by the humidity ; the heats which succeed produce lassitude, and it has been observed, that the maladies are so much more heavy when there is little thunder during the passage of the sun to the equinox. In the bays and on the coast they consist, principally, in dysenteries, flux of a bad character, which, being neglected, if not terminating fatally, degenerates into obstructions, indolent tumours, and chronic affections of the viscera, to be healed only by change of climate.

#### POSITIONS OF THE PRINCIPAL POINTS, ETC.

	Latitude S.	Longitude W.
CAPE SAN ROQUE ; summit of the cliff . . . . .	$5^{\circ} 28' 17''$	$35^{\circ} 17' 12''$
Rio Searamirim ; South point . . . . .	$5 \ 41 \ 0$	$35 \ 15 \ 30$
Forte of Rio Grande do Norte . . . . .	$5 \ 45 \ 0$	$35 \ 14 \ 32$
Point Negra ; extremity . . . . .	$5 \ 52 \ 52$	$35 \ 7 \ 40$
Point Gureo . . . . .	$6 \ 1 \ 49$	$35 \ 6 \ 22$
Anse de Prinji . . . . .	$6 \ 10 \ 12$	$35 \ 6 \ 45$
Point Pipa . . . . .	$6 \ 12 \ 53$	$35 \ 3 \ 42$
Rio Cunhaó ; Entrance South side . . . . .	$6 \ 17 \ 10$	$35 \ 3 \ 25$
Bahia Formosa ; South point . . . . .	$6 \ 23 \ 12$	$35 \ 0 \ 12$
Bahia Traição ; North point . . . . .	$6 \ 41 \ 15$	$34 \ 57 \ 23$
Point Lucena . . . . .	$6 \ 53 \ 35$	$34 \ 50 \ 28$
Church of Santa Theresa . . . . .	$6 \ 56 \ 57$	$34 \ 52 \ 50$
Fort Cabedello . . . . .	$6 \ 57 \ 30$	$34 \ 49 \ 50$
Parahyba do Norte ; Steeple . . . . .	$7 \ 6 \ 3$	$34 \ 52 \ 58$
Cape Branco ; Cliff . . . . .	$7 \ 8 \ 22$	$34 \ 47 \ 58$
Nossa Senhora da Penha . . . . .	$7 \ 9 \ 0$	$34 \ 47 \ 30$
Cliff of Point Guya . . . . .	$7 \ 26 \ 25$	$34 \ 46 \ 10$



	Latitude S.	Longitude W.
Rio Grande de Goyana; Entrance . . . . .	7° 30' 40"	34° 46' 30"
Point das Pedras; Cliff . . . . .	7 35 9	34 45 30
Rio Goyana; Entrance . . . . .	7 30 44	34 47 0
Rio Ay; Fort at the Entrance . . . . .	7 47 13	34 50 28
Nossa Senhora Farinha . . . . .	7 56 43	34 50 28
OLINDA; Western tower . . . . .	8 0 59	34 50 40
PERNAMBUCO; Fort Picao . . . . .	8 3 30	34 51 42
-----; Tower of Recife . . . . .	8 4 7	34 52 37
-----; Tower of Boa Vista . . . . .	8 3 36	34 52 56
Freguezia de St. Antonio . . . . .	8 8 8	34 53 52
Freguezia dos Affogados . . . . .	8 6 16	34 54 0
Nossa Senhora do Rosario . . . . .	8 9 18	34 55 44
Chapel in the Downs . . . . .	8 18 40	34 58 5

**MAKING of the COAST.**—The aspect of the eastern coast of Brasil, between Cape St. Roque, in latitude 5° 28', and the isle of St. Catherine, in latitude 27½°, varies considerably in its appearance. In the southern parallels, from the isle above mentioned to about sixty leagues to the northward of Cape Frio, the lands are very high, have many forests, may be seen, in clear weather, eighteen leagues off, and may be safely approached, with the ordinary precautions, on coming in from sea.

But this is not the case in other parts. Farther to the North the land declines in height, and can be seen at a moderate distance only. It must, therefore, be approached with caution. Such are the portions comprised between *Espirito Santo* and the *Monte Pascoal*, [Mount Pascal,] between *Porto Seguro* and *Bahia*, or the *Bay of all Saints*, between the *Tower of Garcia da Vila* [lat. 12° 32'] and *Cape St. Augustin*, and the following coast, nearly without exception, from *Olinda* to the North, N.W. and W.N.W., as described in the preceding section; whence it will be seen that, from shores of moderate height, they decline to low and sandy beaches, and so continue westward, with few exceptions, to Maranham.

The warnings which may be acquired by soundings, in the proximity of land to which you may be approaching, depend on the part you may be on. These warnings may be of little service on the eastern coast; particularly between the Isle of St. Catharine and *Olinda*, as the bank of soundings extends to no long distance, and great depths prevail on its outer edges; the parallel of the rocks called the *Abrolhos* [18° S.] excepted.

The soundings give 62 fathoms at 18 leagues East from the Island of St. Catharine; 45 fathoms at 12 leagues East from that of St. Sebastian; 32 fathoms at five leagues to the S.E. of Point Joatinga [lat. 23° 27']; 70 at 18 leagues to the S.E. of the entrance of Rio Janeiro; and 68 fathoms at 7 leagues S.E. from Cape Frio. East of the last there are 35 fathoms at the same distance.

Between the parallels of 21° and 22° S. the depths, at 12 leagues from shore, vary from 40 to 17 fathoms. At 30 leagues East from Cape St. Thomé there are more than 100 fathoms. Soundings extend more to the East and S.E. of the *Abrolhos*, though but little to the eastward of the meridian of 37° 10'; which is 27 leagues to the East of these islets; and beyond this there is shortly no ground at 190 fathoms.

No bottom is found at 180 fathoms at only eight leagues to the S.E. of Cape St. Antonio, of Bahia; but, at nine miles to the South of this cape, are 28 fathoms of water: again, at nine leagues, on the parallel of the Morro of St. Paulo, with the Morro in sight to the West, there is no bottom at the depth of 50 fathoms.

From *Bahia* to *Olinda* the bank is generally steep; at nine leagues to the East of the Tower of Garcia da Vila the depth is not less than 160 fathoms: at the same distance to the East of the inlet Itapicuru [lat. 11° 45'] the depth is 180 fathoms; it exceeds 170 fathoms at 20 leagues from Rio Real and Rio Sergipe, [or about 11° 20' S.,] and it is found to be nearly 50 fathoms at ten leagues to the eastward of the mouth of the Rio S. Francisco. Finally, on all the coast, nearly to Pernambuco, there is found not less than 30 to 40 fathoms at nine leagues from shore; and at less than double this distance, on the parallels of Pernambuco and *Olinda*, there is not a depth of less than 110 fathoms.

To the North of the parallel of *Olinda* the depth comparatively lessens, but it is again very great at a little distance from land. There are found from 6 to 9 fathoms only at two or three miles from Cape Branco, before the mouth of the river Parahyba, and before the *Fort dos Reis Mocos*, or mouth of the *Pontangi*; the same at four miles off from Cape

St. Roque, deepening quickly to 40 fathoms, and thence continuing an increase to 10 or 12 leagues from the coast.

Hence it appears that, on a great part of the line of coast between the Isle of St. Catharine and Cape St. Roque, the depths are, in general, either too great or too uniform to serve as a guidance, or to suffice for correcting an estimation of the route to any particular spot. But it is not to be concluded that it is useless to sound on the coast; only observing that too much dependence should not be placed on the soundings at any distance from shore.\*

**The RECIFE**, or singular ridge of coral rock, which borders the coast, has been noticed in page 50. It extends, more or less, all the way from Point Toiro, or Calcanhar, (lat.  $5^{\circ} 6'$ ) to the Morro of S. Paulo, lat.  $13^{\circ} 23'$ , and its intervals form the entrances to the ports of Rio Grande do Norte, Bahia de Traizaô, Mamangape, Parahyba do Norte, Rio Capibarim, the two passages of Tamaraca, Rio Ay, Pernambuco, Santo Aleixo, Porto Tamandaré, Barra Grande, Cammaragipe, Rio S. Antonio, Porto Jaragua, Porto Francez, Sta. Anna das Alagoas, Rio San Francisco, Rio Vasa-Baris, Rio Real, Itapicuru, Bahia, &c.

It has been conjectured that this reef is based on debris brought from the coast by the constant repulsion of the waves; the debris being deposited as the waves become weak in the returning movement, or where a temporary stagnation, at a certain distance, was produced. The Recife, from its nature, acts as a breakwater, the water within it, near the shore, being tranquil. In these pools there is fishing almost throughout the year.

**NATAL.**—The first port of any consequence to the southward of Cape St. Roque is that called the RIO GRANDE DO NORTE,† on the S.E. bank of which is the little city of Natal: the channel to this river is protected by the Recife, both on the North and South. This river, the *Pontangi* of the aborigines, is a rapid torrent in the rainy season; but in the dry season it is much reduced. A survey of it, up to the town, has been made by Lieut. Edm. Scott, R.N., whence it appears that the ends of the two portions of the Recife, forming the entrance, are nearly on a true East and West line from each other; so that the channel way faces the North, while the reefs are nearly in the same direction. The distance between the two extremities is about two cables' length, and the depths  $3\frac{3}{4}$  to 6 fathoms.

The depths within, and up to the town, 4 to 6 fathoms; but there are shoal banks within the reefs on both sides, while the mid-channel is clear. The town is about  $2\frac{1}{2}$  miles from the entrance, and there the breadth of the river is three-tenths of a mile, with an increasing depth of water.

A round fort, called the *Fort dos Reis Magos*, stands on the middle of the southern reef at the entrance; it is insulated at high water, but may be seen several miles off, and is the best mark. To enter the river keep a fort on the main land, within the entrance, open of the extremity of the southern reef, until the round fort on that reef is seen from the inside of it, bearing about S.  $\frac{1}{2}$  E., then run in S.  $\frac{1}{2}$  W. till the fort on the main bears W.  $\frac{3}{4}$  S., and steer for it; when within two-thirds of a cable from it proceed toward a white house on the same side, and then directly for the town, in mid-channel, keeping over to the eastern shore, as there is a shoal bank all the way up on the opposite side.

The entrance of the river, according to the Baron Roussin, is in latitude  $5^{\circ} 45' S.$ , and longitude  $35^{\circ} 14' 24''$ .

Natal is an old town, but its population is small. It was a place of importance during the Dutch wars, and its fortress, by which the city is still defended, was then considered the strongest in Brasil. The port admits no larger vessels than 150 tons burthen. The foreign commerce of the province is inconsiderable, and there is no prospect of its improvement.

"A foreigner," says Mr. Koster, "who might chance to land first at the city of NATAL, on his arrival upon the coast of Brasil, would form a very poor opinion of the state of the population of the country: for, if places like this are called cities, what must the towns and villages be? But such a judgment would not prove correct; for many villages, even

\* For the *Treaties of Friendship and Alliance, of Commerce and Navigation*, between the crowns of GREAT BRITAIN and PORTUGAL, or BRASIL, signed at Rio de Janeiro, 19th Feb. 1810, with some interesting Notes on the same, see Mr. Koster's *Travels in Brasil*, Vol. II. page 313.

† The PROVINCE of RIO GRANDE DO NORTE lies between Parahyba and Ceara. Its coast is uniformly low and sandy; but inland it is described as undulated, and its forests are said to afford the best Brasil wood, and many drugs. The soil is not generally fertile; but the climate is considered healthy. It produces cotton, sugar cane, rice, and several other articles; the rearing of cattle is in some parts a principal object.



of Brasil, surpass this city: the rank must have been given to it, not from what it was or is, but from the expectation of what it might be at some future period. The settlement upon rising ground, rather removed from the river, is properly the city, as the parish church is there: it consists of a square, with houses on each side, having a ground floor only; the churches, of which there are three, the palace, town hall, and prison. Three streets lead from it, which have also a few houses on each side. No part of the city is paved, although the sand is deep; on this account, indeed, a few of the inhabitants have raised a foot-path of bricks before their own houses. The place may contain 600 or 700 persons.

"The lower town is situated on the bank of the river; the houses stand along the bank, and there is only the usual width of a street between them and the river. This place may contain from 200 to 300 inhabitants, and here live the men of trade of Rio Grande. The bar of the river is very narrow, but is sufficiently deep to admit vessels of 150 tons. The northern bank projects considerably, and for this reason it is necessary that a ship should make for it from the southward. The entrance to the reef, which lies at some distance from the shore, also requires to be known, so that altogether the port is a difficult one. The river is very safe, when once within the bar; the water is deep, and quite still, and two vessels might swing in its breadth; but it soon becomes shallow, and in the course of a few miles is greatly diminished. I should imagine that six or seven vessels might swing altogether in the harbour. The bars of rivers that are formed, as in this case, of sand, are, however, not to be trusted to, without good pilots, as they soon change their depth, and even their situation. When the tide enters the northern bank is overflowed about one mile from the mouth of the harbour, and spreads over a considerable extent of ground, which even during the ebb is always wet and muddy, but never becomes sufficiently deep to prevent passing. A new road has been raised over this piece of land, which is about one mile in length."

At six leagues to the southward of the Rio Grande is the Ponta Negra, or Black Point, which may probably derive its name from several clusters of bushes, appearing of a dark green colour, in contrast with the white sand which constitutes the shore; several miles to the north of this are some red cliffs, which the pilots call *Barrieras de Inferno*, [Barriers of Hell], and which extend in the direction of North, at some distance from shore. A rivulet, *Conceição*, falls at the foot of them, through an opening of the Recife, before which breakers extend to about a mile. A dozen fishing-huts may be seen at the mouth of the rivulet, and some small vessels in the inlet.

BAHIA FERMOsa, (or Fair Bay,) latitude  $6^{\circ} 12'$ , is nearly two leagues in extent from North to South, and has, in the middle, 4 fathoms at low water; but having much foul ground, patches of coral with some rocks, and open to the sea, it is no safe anchorage.

The PONTA DA PIPA, between Bahia Fermoza and Ponta Negra, takes its name from the shape of a winepipe. It is a rock on the point of land upon which the sea breaks. To the N.W. of it are two villages.

BAHIA TRAIZAO, or TREASON BAY, at nine leagues to the southward of Bahia Fermoza, has been heretofore described as the best anchorage on this part of the coast; but it is only a small cove, not possessing such advantages as have been described, and it offers no shelter against winds from between North and South by the East.

To the northward of the Bahia Traizão the coast entirely changes the nature of its aspect, and presents a continuous line of downs of white sand, covered at intervals with bushes, and variegated only by several clusters of cocoanut trees. Hereabout the *jangadas*, or *rafts*, of the coasters, common to the southward, as well as habitations on the beach, almost entirely disappear; and all circumstances indicate the sterility of the country, and deficiency of population. Near this parallel commences the *Sertão*, a vast territory, extending to the N.W., noted for its sterility, and little better than a desert.

RIVER MANANGUAPE.—At a league to the southward of the Bahia Traizão, in the inflection of the coast, is the little River Mananguape. The coast between is distinguished by several small reddish cliffs. The river is a stream navigable by the coasters only; its South point is of sand, woody, very low, and it projects to the N. by E. terminating in breakers, on the North side of which is the entrance. On the North side of this entrance is a village, which may be seen from the offing.

RIO PARAHYBA.—This river, the largest in the neighbourhood, is a place of considerable trade. Its entrance may easily be found by making *Cape Branco*, which lies 10 miles to the southward.



The PROVINCE OF PARAHYBA comprehends the larger portion of the old captaincy of Itamaraca, and extends West nearly 200 miles to the boundary of Ceara. The river Paraiiba, or Parahyba, which rises in the Serra do Jabitaca, flows to the north-east, and falls into the Atlantic by two channels, divided by the island of St. Bento. The coast of Parahyba extends about sixty miles along the shores of the sea and bays of the town.

The absence of industry and the state of morals in this province has been severely animadverted upon in Brasil, and, instead of justice being enforced by the laws, it is said that parties take not summary justice, but revenge into their own hands. Religious observances, fêtes, and processions, are, however, common.

Mr. Kidder, who gives the most recent account of this province, sailed to it by a singularly-built vessel, a sort of catamaran, called in Brasil a *jangada*, which is described hereafter.

They sailed from Itamaraca by moonlight for Parahyba, with a tolerable breeze from the land, and, as these coasting craft pass usually within the reefs which lie off the shore, they seldom encounter a rough sea. He passed the several little ports of Barras Pontas, Pedras Goyana, Gracire, Pildinhu, &c.

Every village along the coast was adorned with its grove of cocoa trees. Several *jangadas* engaged in fishing were also passed. The coast presented sandy beaches, now and then intercepted by perpendicular bluffs of red soil, from twenty to sixty feet high, over which, to their verge, grew shrubs. On doubling Cape Blanco he was landed at Tambuin, only six miles, across the country from Parahyba, whereas the voyage by sea would have been thirty to forty miles round another cape. Not being able to procure horses, he, with some others, walked to the city of Parahyba.

CAPE BRANCO is a projecting headland, in latitude  $7^{\circ} 8' S$ . It is a steep cliffy shore, of white sand, which may be distinguished edgewise from North to South, but blends with the adjoining coast when in sight from the offing. Two remarkable cocoanut trees mark the extremity of the cape. At two or three miles from the land there are 7 or 8 fathoms of water, bottom of sand, oaze, and coral. The coast hereabout affords neither anchorage nor shelter.

From off Cape Branco the country to the N.W. appears like two plains, which, on advancing, become distinctly marked. The outer one, by the sea, is low and sandy, but woody in the higher part; the inner plain presents a line of small hills, wooded, and pretty in appearance. The river Parahyba flows between the two plains, and its direction is S.S.W. from its mouth, which is situated in latitude  $6^{\circ} 56' S$ .

The South point of the mouth of the Parahyba is low, sandy, and woody, and forms the extremity of the first plain above described. The barrier reef extends in front of this plain, at the distance of nearly half a mile. The North point is formed, on the second plain, by a more elevated coast; and on it are some cocoanut trees. On the height, to the N.W., is the conspicuous convent of *Nossa Senhora de Guia*, inhabited by the order of Santa Theresa. Extensive breakers indicate the mouth of the river; in front of which, at the distance of three miles, there are 10 fathoms of water.

Of the two points which form the outer entrance of the river, that on the South is called *Ponta Balea*, [Whale Point,] although the fishery for whales does not extend to the North of Bahia; that on the North bears the name of *Ponta Lucena*; these points bear from each other N.N.W. and S.S.E.  $3\frac{1}{2}$  miles: both are distinguished by extensive breakers.

On the shore within *Ponta Balea* is a low fort, *Cabedello*, which may be seen from the offing, when traversing off the mouth of the river, and it serves as a point of recognition for the low and even coast, which is destitute of other buildings. The bar is shoal, and dangerous to a stranger, and its best water, at low tide, is  $2\frac{1}{2}$  fathoms. Pilots come off and bring vessels to a roadstead off the fort, in order to be visited.

The city of Parahyba is about four leagues from the sea, but the sinuosities of the river make the distance six leagues. Vessels of 150 or 200 tons cannot proceed much above the Fort Cabedello, but small vessels go up to the town, and load with cotton, sugar, Brasil wood, &c.

From a survey of this river by the Honourable Captain de Roos, R.N., in 1832, it appears that the Fort Cabedello, on the eastern side of the entrance, stands in latitude  $6^{\circ} 57'$ , and long.  $34^{\circ} 50'$ . Variation of the compass,  $5^{\circ} W$ . High water, on full and change, at 5h. Springs rise 12 feet. The land breeze is seldom experienced here.

The Remarks of Captain de Roos, as follow, were first given in the "*Nautical Magazine*," December, 1833.

"The river Paraiba do Norte, which is situated sixty-seven miles North of Pernambuco, has an extensive commerce, and is generally visited by ships homeward bound from that port, to complete their cargoes. Vessels drawing  $16\frac{1}{2}$  feet water can safely enter at the springs.

"The coast here trends North and South, and the direction of the river is S.S.W. nearly in a straight line. On the South point (Balea) of the entrance, which is low, sandy, and wooded, is built the strong fortress of Cabedello. The North point is also low, with cocoanut trees upon it; but immediately behind is some high wooded land, on the point of which the remarkable Convent da Guia is distinctly seen. The barrier reef terminates abreast of the South point, when the bar commences, and continues till it reaches the extensive shoals which stretch out from Point Lucena.

"Ships approaching from the South are recommended to make Cape Branco, which is four leagues South of Cabedello. It is a remarkable point, with two cocoanut trees on the very extremity. From the northward the latitude may be run down when Cabedello Fort will appear. It is the only fortress for many leagues upon the coast, which otherwise bears a great sameness of appearance. Ships should on no account venture into less than six fathoms of water.

"A gun fired will bring off a pilot: they come in 'jangadas'\* from the Coco village to the South of the fort, and are considered expert and trustworthy.

"The bar is at some distance from the land, and, as the passage is tortuous, it is not safe to attempt to enter without a pilot. On it there is eight feet of water at low water spring tides.

"The bottom is sand, in some spots hard. There are breakers on either hand, and the marks which are given are difficult to distinguish, and therefore not to be depended upon.

"The land winds are not of frequent occurrence. Vessels, therefore, have generally to beat out against the prevailing N.E. wind, which blows steadily. His Majesty's sloop *Algerine*, working out in October, 1832, made twenty-one tacks.

"It is usual for all ships entering, to anchor off the Fort Cabedello, in order to be visited: after this they are at liberty to proceed up the river. H.M. sloop *Algerine* was anchored with the fort bearing, by compass, S.  $60^{\circ}$  E., distant a quarter of a mile, in five and a half fathoms. Bad water and few supplies are to be found at this place.

"A different pilot is appointed to take vessels up the river, which, as the wind is generally fair, is an operation of little difficulty or danger, and is almost always effected in one tide. The two shoalest spots are situated, one just above Cabedello, and the other abreast of the entrance of the Tambia river. Going down is tedious, as ships have beating winds, but the reaches are long. The bottom throughout is soft mud.

"It is necessary to warp into the anchorage off the city, which is perfectly sheltered and secure. Indeed, the only vessel ever lost in the river was one which, by inadvertence, grounded upon her anchor, and foundered.

"Water is to be procured by sending boats with casks up the river. That of the Tambia is celebrated for its purity. Provisions may be had in abundance, and at a very moderate rate."

The town of PARAHYBA contains about 3,000 inhabitants. The principal street is broad and paved. The houses are mostly of one story, with the ground-floors as shops, and some have glass windows. Here are six churches, and some convents, with several public fountains. The prospects from the windows present the finest Brazilian scenery; extensive

\* "A voyage at sea upon a jangada is not an incident of every day's occurrence, at least with North Americans. Nor is it easy to convey in words a perfect idea of the simple and singular structure by which the savages of Brasil were accustomed to traverse the waters of their coast hundreds of years ago. Although in constant use since the period of discovery, the jangada has preserved its aboriginal form and style of construction, and even in this age of improvement is not likely to undergo any change for the better. Properly speaking, it is merely a raft, composed of unhewn logs of a peculiarly light wood, called *pau de jangada*. Trunks of trees are selected, about six inches in diameter, as nearly straight and uniform as possible. These are stripped of bark, sharpened at each end so as to cut the water, and then fastened to each other by three rows of transverse pins. The number of logs used is generally six, although I have seen them composed of three, four, seven, and even twenty logs. These latter are used as lighters for unloading vessels, and are nearly square in form, while the sailing jangada is rectangular, and generally about five feet in width by sixteen or twenty in length."—*Kidder's Brasil*, 1844. For a figure and description of them see Steele's "*Elements and Practice of Rigging and Seamanship*," 2 vols. 4to., 1794.

and evergreen woods, bounded by a range of hills, and watered by several branches of the river, with here and there a whitewashed cottage upon their banks, half concealed by lofty trees.

The lower town consists of small houses, and is situated upon the borders of a spacious basin or lake, formed by the junction of three rivers, which from hence discharge their waters into the sea, by one considerable stream. The banks of the basin are covered with mangroves, as in all the salt water rivers of this country. The lands of the captaincy are rich and fertile, and the sugar is considered as equal to the best in any other part of Brasil.

"The river is very winding, and is not navigable beyond the present anchorage. Canoes go up a long distance, although in the summer season the bed of the river becomes dry beyond twenty leagues. Its prevailing course is north-west, and the town is situated upon the southern bank. One of the finest buildings it contains is a *new trapiche*, or government warehouse. In front of it were three English vessels anchored, loading with cotton and Brasil wood. They were the only vessels in port.

"Extending from the river, two streets contain the principal buildings and commercial establishments of the lower town. Several houses were then in process of erection, rents were high, and landed property had recently been on the rise. The number of inhabitants is less than in the upper town. The elevation of the latter above the water is about 200 feet, and rises rather abruptly. The military arsenal, a large yellow building, is beautifully situated, in a level area, between the two towns. The public edifices of the upper town and lower town are built in the style usual in the Brazilian cities, and the treasury has in front a high flight of steps by which it is entered. The streets are wide, and paved with a kind of clay slate, much worn. The old *gelousias*, suspended from projecting cornices of thick carved stone, are still seen at Parahiba, which, in its general aspect, is like our towns.

"A gentleman just returned from a journey into the interior described the state of morals and civilisation in the seretens of this province, and of Rio Grande do Norte, as shocking in the extreme."—*Mr. Kidder*.

The harbour is, as before stated, about 10 or 12 miles below. Small vessels ascend to the town: the river navigation is performed in rude boats or canoes.

The coast to the southward of Cape Branco, and hence to the city of *Olinda*, has been very imperfectly described. The old charts and pilots represent an opening of the Recife, called *Porto dos Francezes*, at about four leagues to the southward of Cape Branco, affording occasional anchorage for ships, but on bad ground. Hence, southward, the Recife continues to the *River Capibarami*, or Goyanna River, in latitude  $7^{\circ} 30'$ .

The mouth or bar of this river lies nearly midway between the two points named *Coqueiros*, or *Cocon tree Point*, and *Ponta de Pedras*, or *Rock Point*. Here the outer reefs extend to nearly a league from the land. It is said that vessels of 40 tons may proceed up the river to the town of *S. Miguel de Goyanna*, which is seven leagues up from the bar.

The Points *Coqueiros*, or *Guia*, and *Pedras*, in latitudes  $7^{\circ} 25'$  and  $7^{\circ} 35'$ , are nearly on the same meridian,  $34^{\circ} 47'$ , and they are the easternmost points of Brasil.

**ITAMARACA.**—This island, lying parallel with the coast of the main, is about eight miles in length from North to South. At its North end is a shallow and difficult channel, called the *Barra* or *Entrance of Catuama*, which admits nothing larger than boats and small craft, although in some parts there is more than three fathoms at high water. At the South end it has been said vessels of 300 tons may enter, on a W.S.W. course, between the reefs, which extend outward  $2\frac{1}{2}$  leagues; but it must be with a fair or leading wind, as there is not sufficient space for tacking. In the channel, at low water spring tides, there is a depth of three fathoms, and the tide rises nine feet. The river, in the narrowest part, is a musket shot in breadth; and at this narrowest part has a bank, which has a depth of  $2\frac{1}{2}$  fathoms over it, at low water spring tides. Immediately above this bank is deep water, and so smooth that a ship may ride with any sort of cable. To this anchoring place, from the bar, the distance may be about a league.

Itamaraca has been fully and pleasingly described by Mr. Koster.\* This is one of the oldest settlements of the Portuguese upon the coast, and was given to Pedro Lopez de Souza, who took possession of it in 1531. In the year 1630, it had twenty-three sugar-works upon it; but, as a commercial station, it has fallen into insignificance. The island, however, is still populous, and has several pleasant villages, the inhabitants of which live much more happily than a stranger would imagine. The shores are planted with cocoa

\* Those who wish for a copious and correct description of Northern Brasil may be amply satisfied by the perusal of the two volumes by Mr. Koster, London, 1817.



trees, among which are thickly scattered the straw cottages of fishermen: in some spots may be seen respectable whitewashed dwellings, and there are salt works on the island, which are one great source of its wealth; these are formed upon sands, which are overflowed by the tide at high water.

Mr. Koster says the harbour is good, and the entrance to it commanded by an old fort, which is much out of repair; the garrison is scanty, and without discipline. The entrance to the port is formed by an opening in the reef. It is readily discovered from sea, being immediately opposite to the channel or river into which it leads, and as there are breakers both to the northward and southward. Having entered, some small breakers will be seen ahead, or rather toward the South side of the channel, unless the tide is out, and then the water is quite still. The anchoring-ground is opposite to the fort, and on the outside of it; but opposite to the village of Concepcion (*N. Sa. da Conceição*), which is farther in than the fort, there is considerable depth of water. Some parts of the ground are rocky, but others good.

Itamaraca has improved greatly under the auspices of a respected vicar, Pedro de Souza Tenorio, and a happy change has latterly appeared in society under his charge. When the people of colour now go to mass, if the family be in a respectable way of life, the younger females wear gowns of printed cotton, English straw bonnets, stockings also of foreign manufacture, and neat shoes made by the workmen of the country. The young men appear in nankeen pantaloons, and jackets of printed cotton, shirts of cambric muslin, hats of English make, stockings, and shoes. "Indeed, of late years, since articles of dress have been cheap, and have come into general use, since a subject of emulation has arisen, and the means of showing it has been afforded, every hamlet sends forth its rival belles and beaux."

**PAO AMARELLO.**—The bar of PAO AMARELLO, or Yellow-wood River, is in the latitude of  $7^{\circ} 54'$ , long.  $34^{\circ} 49' 55''$ . This little harbour is formed by a break in the reef, or wall, which here runs parallel to the shore, both to the northward and southward. There is a depth of 3 fathoms near the entrance, but it is a spot of difficult access, lying between the reef and the land; and is unsafe, because the channel is so narrow that it is necessary to ride with one anchor on the reef, and the other on shore, to prevent the ship's swinging with the tide.

The shore between this place and Itamaraca is composed of woody hills, cultivated, and separated from the sea by a beach of white sand, at two or three miles from which you may find from 10 to 14 fathoms of water; bottom of sand and gravel.

The coast hence southward to Olinda increases in height, and may be seen from a distance of about 6 leagues.

On advancing to the Amarello, you may see on the beach a small battery, intended to defend the opening in the Recife. Vessels drawing 6 or 7 feet of water, which enter here, may proceed, with high water, hence to Pernambuco, by passing within the Recife and banks of Olinda.

At seven miles to the southward from Pao Amarello is the POINT of OLINDA, in the parallel of  $8^{\circ}$  South. The navigation of the coast between is impeded by extensive reefs, as shown on the chart. Ships coming from the northward should, in passing the Point of Olinda, give it a berth of three miles, keeping it not less than 10 fathoms; for within that distance the soundings may become irregular, and the reef in many parts is steep-to.

## PERNAMBUCO AND OLINDA.

A good idea of the Road and Harbour of Pernambuco, with the coast of Olinda, may be gained from a reference to the survey of Captain Hewett, from whose pen have issued the following directions.

The CITIES of PERNAMBUCO and OLINDA are the principal places of trade on the Brazilian coast, next to Rio Janeiro and Bahia. The land in the vicinity is fertile and well cultivated; producing, principally, sugar and cotton. It is not of that elevated and grand description as the land about Rio, hereafter described, but it affords the most pleasing prospects, from the richness of its plains, and the numerous seats scattered in every direction. The summit of Olinda, on approaching the land, may be recognised at a distance of 5 or 6 leagues.

**PERNAMBUCO.**—The **RECIFE**, or **REEF**, of Pernambuco, which forms the harbour, runs in a parallel line with the shore, at about a musket shot distance from Coconut Island, to the southward, to abreast of Fort Bruno to the northward. On the extremity of the latter is a small octagonal tower, called **PICAO**, and mounting seven guns: this tower assists Fort Bruno in commanding the immediate entrance to the harbour. Between the Picao and Fort Bruno is the harbour-bar, the greatest depth on which, at low water, is 10 feet, and is formed by an accumulation of sand, washed through a natural break in the reef, at a short distance from the Picao tower. This break has been frequently filled up by the Brazilians; but all their efforts to exclude the sand totally have hitherto proved ineffectual: so that the water on the bar gradually decreases in its depth; and the inhabitants, in consequence, are under the greatest apprehension of the harbour being, in time, choked up.

Large ships discharge and take in their cargoes in a basin called the *Poço*, or *Well*, immediately at the head of the reef, and outside the harbour. The entrance to the latter is between some detached sunken rocks, apparently a continuation of the reef, called the **GREAT BAR**. It has on it 17 feet of water, which increases to 20 within, where the vessels moor. The inner, northern, and southern sides, are formed by the gradual decrease of depth toward the shore, and are sandy.

*Small vessels run over the Bar of Picaô*, called also the **LITTLE BAR**, which has 12 feet on it: the marks for it are the two turrets of the southern angles of Fort Bruno in one. Over one or the other of the two bars described all vessels must pass to go into the harbour.

At the distance of a mile and a quarter E. by N. from the Picaô tower, lies the body of the **ENGLISHMAN'S** or **ENGLISH BANK**, in length, from North to South, three-quarters of a mile, and in breadth, from East to West, half a mile. The shoalest water on the bank is 2 fathoms; the bottom is excessively rocky, as well as its neighbourhood. The marks for it are a large cocoanut tree, distinguishable from all parts of the bay, and situated between the two most elevated houses on the hill above **OLINDA**, in one with a kind of jetty on the beach immediately under that town, and bearing N.  $\frac{1}{2}$  E. The cross bearing for the southern extremity must be taken by the compass, the Picaô tower due West.

Between this bank and the Basin, or *Well*, is a passage of 5 fathoms, nearly half a mile in breadth.

*In the offing* the bottom is composed of fine white sand; but, nearer the coast, numerous patches of coral are interspersed, dangerous to cables. *The best anchorage for men-of-war*, is with Olinda North, and the Picaô tower N.W., in 6 fathoms; as this is the only spot in the bay, near the town of Pernambuco, where they can lie, without the danger of parting in the space of three or four days.

*Ships from the northward*, on sailing in, should give Olinda Point an offing of 3 miles: never decreasing the depth to less than 10 fathoms; for, within that depth, the irregularity of the soundings may become alarming to a stranger. When abreast of Olinda, with the offing described, a S.W. course will reach the anchorage, clearing Englishman's Bank about a mile, and gradually altering the depth to 6, 8, 7, and 6 fathoms.

The **LIGHTHOUSE**, with *revolving* light, at the entrance of the harbour, was first lighted 2nd Feb. 1822.—It stands about 50 yards from Fort Picaô, on the point of the reef. The tower, octagonal and painted white, stands on a rock which is covered at one-quarter flood. The lantern exhibits three lights in succession, from sunset to sunrise, of which two are brilliant, and the other *red*: these make one complete revolution in every two minutes, and may be seen from the masthead, in clear weather, 20 miles off.

THE **SITUATION** of **PERNAMBUCO** was satisfactorily determined by Captain Hewett, in 1814, 1815. The tower of *Fort Picaô* was given by this gentleman as  $8^{\circ} 3' 39''$  S. and  $34^{\circ} 52'$  W.—Captain Cotesworth, commander of the *Creole*, a regular trader to Pernambuco, has since given us the latitude of the same tower as  $8^{\circ} 4' 15''$ , the result of repeated observations: and he pronounces Captain Hewett's longitude to be strictly correct. From the relative situation of Olinda Point, Captain C. makes its latitude  $8^{\circ} 1'$ . The survey by the Baron Roussin gives the latitude of the Fort as  $8^{\circ} 3' 27''$ , and the longitude  $34^{\circ} 51' 42''$ , which confirms that of Captain Hewett.

**CAPE ST. AUGUSTIN** is a high, rugged, and projecting promontory, which may be readily known by its red cliffs, with a church and barn on its summit. It has, also, on its eastern extremity, a battery mounting five guns, which is difficult to be distinguished at any considerable distance. The cape is described by M. Roussin as a hill lightly wooded, of moderate height, declining gradually to the sea: remarkable by the red cliffy spots on the

termination of several points, by its arid aspect, and the church on its summit, with the battery to the E.N.E., intended to protect several small anchorages in the vicinity, but which appear to be no longer used.

By giving Cape St. Augustin an offing of 6 or 7 miles, when bound to Pernambuco from the southward, and steering a N. by E. course, you will soon gain a sight of the city of OLINDA ahead, situated on the northern extremity of the bight, which contains the HARBOUR and ROAD OF PERNAMBUCO. The city stands, principally, on the southern declivity of a pleasant hill; and, when the highest buildings are well in sight, Pernambuco will be discovered to the southward of them; the site being low and sandy.

## DESCRIPTION OF THE PROVINCE AND INTERIOR OF PERNAMBUCO, ETC.\*

The province of Pernambuco has constituted one, if not the most important, part of the Brazilian empire since the period of the Dutch conquest. It abounds with many good harbours, and the soil is very generally fertile. Its capital has been called the Tripoli of America.

The province of Pernambuco, as reduced by the separation of Alagoas, is divided into thirteen comarcas, viz., Recife, Cabo, Rio Formoso, San Antao, Bonito, Limociro, Nazareth, Pua d'Alho, Goyanna, Brejo, Garanhuns, Flores, and Boa Vista; the free population of the whole is stated by Mr. Cowper to amount to 600,020 souls (exclusive of foreigners); the basis of this calculation is the census taken in 1842, the period of the election of the legislative assembly of 1846, which gave for the whole province 120,004 hearths, and upon the calculation made of there being five persons to each hearth: viz., the husband, wife, two children, and one domestic. This last census, according to the best informed persons, is as nearly exact as can be ascertained. The number of slaves is, by some, calculated to exceed by two-thirds the free population; others increase this estimate, but the former proportion may approximate more closely to the true number. The greater portion of the slaves are employed in the 512 sugar plantations which this province contains, and in about 200 small engenhos in the western comarcas, where the coarser kind of sugar is manufactured for the consumption of the inhabitants of the *Sertos* (or mountainous region), in the provinces of Piahy, Ceara, &c. The other predial slaves are employed in the cultivation of cotton, mandioca, vegetables, &c. In the comarca of the Recife, which possesses many extensive plantations of sugar-cane, the cultivation of farinha, vegetables, fruit, &c., for the consumption of the Recife and Olinda, with their suburbs, forms a gainful pursuit to the agricultural people.\* The island of Itamaraca, in this comarca, is remarkably fertile, producing tropical vegetables of every description, and is celebrated for the superior flavour of its grapes and other fruits.

PERNAMBUCO, or, as this city is more commonly called in the country, the *Recife*, or the Reef, is situated close to the Atlantic coast. Its free population, including the suburbs, is stated by the British consul, in 1845, to amount to 74,310 inhabitants, and the adjoining town of Olinda has 17,824, so that the total number of free inhabitants in these towns, exclusive of slaves, is 92,134, among whom are enumerated 160 French, 125 English, and 300 Germans, including 200 German labourers, who arrived under contract for the service of the provincial government. Of United States' citizens the number seldom exceeds ten or 12.

The city of Pernambuco and its suburbs are divided into three parishes; within the town are those of San Pedro de Gonsalves, or Recife, San Antonio, and Boa Vista. These three contain seventeen churches, and also a British chapel; two monasteries; three recolhimentos, or asylums for girls; six hospitals, public and private; a theatre; a government palace; customhouse; prison; marine and military arsenals; and three suits of barracks for troops. Its institutions for public instruction are a lyceum, two Latin, and seven primary schools. It has three printing presses, publishing two daily newspapers and three other periodicals, besides occasional volumes of books. Its streets are paved in part, and illuminated by 360 lamps. Four old fortresses, the Picão, on the extremity of the reef; the Brum and the Buracco, on the sandy shore towards Olinda; and Cinco Pontas, or the Pentagon, on the southern front of the city.

The appearance of Pernambuco, when seen from the water, is peculiar; its side is flat,

\* Extracted from Macgregor's "Commercial Tariffs," &c., 1847; and the remainder written, mostly, in the year 1811.

† Mr. Cowper's, the British Consul's, Reports, 1846.



and but little elevated above the level of the sea. The white high buildings erected on the praya seem to rise from the ocean. Inseparable from this view of Pernambuco is that of Olinda, on a bold and picturesque hill two miles North. Its natural appearance caused Duarte Coelho, as he arrived on the coast, in 1530, to exclaim, "*O linda situacao para se funda uma villa!*"—"O beautiful site for a town!" His exclamation was immortalised by being used, in part, to furnish a name.

Olinda continued the capital of the province for about 200 years; but, at length, owing to its situation not being favourable for commerce, from being too far from the Recife, which forms the only harbour near, a town gradually arose up near the Recife, by which name it was called. Mr. Kidder says,—“Many of the houses of Pernambuco are built in a style unknown in other parts of Brasil. That occupied by Mr. Ray, United States’ Consul, stood fronting the water side. Its description may serve as a specimen of the style referred to. It was six stories high. The first, or ground-floor, was denominated the *armazem*, and was occupied by male servants at night; the second furnished apartments for the counting room, consulate, &c.; the third and fourth for parlours and lodging rooms; the fifth for dining rooms; and the sixth for a kitchen. Readers of domestic habits will perceive that one special advantage of having a kitchen located in the attic, arises from the upward tendency of the smoke and effluvia universally produced by culinary operations. A disadvantage, however, inseparable from the arrangement, is the necessity of conveying various heavy articles up so many flights of stairs. Water might be mentioned for example, which, in the absence of all mechanical contrivances for such an object, was carried up on the heads of negroes. Surmounting the sixth story, and constituting in one sense the seventh, was a splendid observatory, glazed above and on all sides.

“The prospect from this observatory was extended and interesting in the extreme. It was just such a place as the stranger should always seek in order to receive correct impressions of the locality and environs of the city. His gaze from such an elevation will not fail to rest with interest upon the broad bay of Pernambuco, stretching with a moderate, but regular incurvation of the coast, between the promontory of Olinda and Cape St. Augustine, 30 miles below. This bay is generally adorned with a great number of *jangadas*, which, with their broad latine sails, make no mean appearance. Besides the commerce of the port itself, vessels often appear in the offing bound on distant voyages, both North and South. No port is more easy of access. A vessel bound to either the Indian or the Pacific Ocean, or on her passage homeward to either the United States or Europe, may, with but a slight deviation from her best course, put into Pernambuco. She may come to an anchor in the *Lameirão*, or outer harbour, and hold communication with the shore, either to obtain advices or refreshments, and resume her voyage at pleasure, without becoming subject to port charges. This is very convenient for whaling ships and South Sea traders, which accordingly make this port a great rendezvous. In order to discharge or receive their cargoes, they are required to come within the reef, and conform to the usual port regulations.”

Ships of war seldom remain long here. None of large draught can pass the bar, and those that can are required to deposit their powder at the fort. The strong winds, and heavy roll of the sea, are frequently sufficient to part the strongest cables. The commercial shipping is under full view from the observatory, yet it is too near at hand, and too densely crowded together, to make an imposing appearance.

OLINDA, built upon a hill, has white houses and massive churches with luxuriant foliage interspersed among them, in which those edifices on the hill side seem to be partially buried. From this point a line of highlands sweeps inward, terminating at Cape St. Augustine, and forming a semicircular *reconcave*, analogous to that of Bahia. The summit of the highlands is crowned with green forests and foliage.

“Indeed,” says Mr. Kidder, “from the outermost range of vision to the very precincts of the city, throughout the extended plain, circumscribed by five-sixths of the imagined arc, scarcely an opening appears to the eye, although, in fact, the country overlooked is populous and cultivated. Numbers of buildings also, within the suburbs of the city, are overtowered, and wholly or partially hid by lofty palms, mangueiras, cajueiros, and other trees. The interval between Recife and Olinda is in striking contrast to this appearance. It is a perfectly barren bank of sand, a narrow beach, upon one side of which the ocean breaks, while, on the other side, only a few rods distant, and nearly parallel, runs a branch of the Beberibe River. This stream is navigable to boats as far as Olinda, and forms the principal channel of communication with that place, although the beach may be considered a species of turnpike.”

At a distance of from one-fourth to half a mile from the shore is the bank of rocks already mentioned as extending along a great extent of the northern coast of Brasil. Its top is scarcely visible at high water, being then covered with a surf which dashes over it. At low water it is left dry, like an artificial wall, with a surface sufficiently even to form a promenade rising out of the sea. It is from two to five rods in breadth. Its edges are a little worn and fractured, but both its sides are perpendicular to a great depth. The rock, in its external appearance, is of a brown dark colour. When broken, it is found to be composed of a very hard species of yellow sandstone, in which numerous bivalves are embedded in a state of complete preservation. At several points deep winding fissures extend through a portion of the reef, but in general its appearance is regular, much more so than any artificial wall would be after exposure for ages to the surges of the ocean.

Opposite the northern end of the town, as though a breach had been artificially cut, there is through this reef a channel of sufficient depth and width to admit ships of sixteen feet draught, at high water.

Close to this opening, on the extremity of the reef, stands the fort, built by the Dutch. Its foundations were admirably laid, being composed of long blocks of stone imported from Europe, hewed square. They were laid lengthwise to the sea, and then bound together by iron. A wall of the same origin extends from the base of the fortification to the body of the reef.

The district of San Pedro is not large. Its buildings are chiefly in the old Dutch style of architecture, and many of them retain their latticed balconies or *gelouzius*.

The principal street of the Recife is Rua da Cruz. At its northern extremity, towards the Arsenal da Marinha, it is wide, and imposing in its aspect. Towards the other end it is narrow, and flanked by high houses, like most of the streets by which it is intersected. A single bridge connects this part of the city with San Antonio, the middle district. This bridge across the Beberibe is more modern than the one having a row of shops on either side. That having been broken down in the revolution of 1824, was rebuilt in a different style. It has no covering, but is flanked on either side, and in the middle, by rows of seats, which furnish a favourite resting place to throngs of persons who walk out in the evenings to enjoy the cool air and refreshing sea breeze. On the side towards the sea vessels anchor near to it, though they do not pass above this bridge. At either end stands an archway, built of brick. These arches are disconnected with the bridge, although they span the street leading to and from it. The principal object of their construction seems to have been to furnish a prominent place for shrines and images. These arches survived the destruction of the old bridge, on account of the religious purposes to which they are devoted.

In the San Antonio quarter of Pernambuco are the palace and military arsenal, in front of which a wall has been extended along the river's bank. Above the water's edge there is a row of green-painted seats, for the accommodation of the public.

The principal streets of this quarter, with an open square used as a market place, are spacious. The bridge crossing the other river is long, although the stream beneath is shallow. On the southern or south-western bank of this river stands the British chapel, in a very convenient place. Boa Vista is chiefly occupied by private residences and country seats. A few large buildings stand near the river, and, like most of those in the other sections of the town, are devoted in part to commercial purposes. Beyond these, the houses are generally low, and are surrounded by gardens or *sítios*. The streets are unpaved, and in a most wretched condition, and many of the streets and lanes in the suburbs are filthy.

Pernambuco carries on a great foreign and domestic trade. The coast near it is very low, and the country well clothed with woods, in perpetual verdure, which, contrasted with the white cottages scattered along the shore, the Indians fishing in their jangadas or canoes, and the beautiful serene sky, affords to the European, as he approaches it, a most pleasing prospect.

The islands on which the town is built are connected by two bridges, one of which is a most beautiful structure, constructed by the Dutch, when they took this place from the Portuguese, in 1670. It consists of fifteen arches, under which runs a strong and rapid river, that comes many hundred miles down the country. On each side of this bridge are shops full of European merchandise, particularly English manufactures, or, as they are called by the Portuguese, "*facendas Inglesas*." The river is seen winding up as far as Olinda, which is seated on a hill; on either bank beautiful white cottages, intermixed with mangrove and cocoa trees and fruitful vineyards, the Indians paddling down the river with their unwieldy canoes, the fishermen on the beach drying their nets, and nature dis-



playing her gayest verdure, form altogether a *coup d'œil* which it is impossible to describe. The other bridge is a very long wooden one, in which there is nothing remarkable, more than its being quite open to the breeze which comes down the river. It is, on that account, much resorted to in the evening, especially by the English, who, seated on each side, often amuse themselves by criticising, with the characteristic liberty of their country, the numerous passengers.

The harbour of Pernambuco is wonderfully convenient. It is formed by a natural pier, extending five miles in a direct line. This is a coral reef so exactly straight and even, that one would almost imagine it the work of art. The vessels lie alongside each other in tiers, moored head and stern, at about half pistol shot from the shore, and close to this reef, which, at high water spring tides, is nearly on a level with the surface of the sea, and forms an excellent barrier.

At Pernambuco the heat is excessive, the thermometer frequently being at 90° in the shade. During the night it is always calm, with much lightning. At about nine in the morning the sea breeze comes gradually, and is strongest about noon, when, by degrees, it dies away into a calm, that generally takes place toward sunset.

The sudden change of temperature, common in other climates, is rare in Pernambuco, especially during the summer months, at which period the weather is delightful. In the rainy season some days occur when the atmosphere is charged with haze and mist, rendering the sun invisible: some minutes before the rain falls the clouds descend thick and black, the air is oppressively close, the heaving of the sea is suspended, and a gloomy calmness prevails,—sure prognostices of the approaching rain, which shortly pours down in torrents, refreshing the parched earth, and fertilizing the soil.

The port is very well fortified in appearance, but it would make a poor resistance in case of attack. All vessels, on arriving in the harbour, are obliged to land their powder, which is conveyed by proper officers to a magazine, and returned on departure: but, while deposited, it is in general well tithed.

As Pernambuco is seated on very low ground, and quite surrounded by water, intermittent fevers are very common. There is only one hospital, which consists of a very large room, with about thirty beds on each side, filled with wretches suffering under the most loathsome diseases. A man stands at the door to solicit the charity of passengers, which contributes to defray the expenses. When a patient dies, he is laid on a table at the entrance, with a plate on his breast, to receive money for his burial. Four or five are frequently thus exposed at once. Great numbers of slaves die of the small pox, fever, and dysentery.

Mr. Koster has said of Pernambuco, that the land is low, and consequently not to be seen at any considerable distance; “but, as we approached it, we distinguished the hill upon which stands the city of Olinda, a little to the northward; and, at some leagues to the southward, the Cape of S. Agostinho; a nearer view discovered to us the town of *St. Antonio de Recife*\* almost ahead, with the shipping in front of it; the dreary land between it and Olinda, which is one league distant, and cocoa groves northward, as far as the eye can reach: southward of the town are also seen great numbers of cocoa trees, woods, and scattered cottages. The situation of Olinda is the highest in the neighbourhood; and, though not very high, is still not despicable. Its appearance from the sea is most delightful; its whitewashed churches and convents upon the tops and sides of the hill; its gardens and trees, interspersed among the houses, afford a promise of great extent, and hold out expectations of great beauty.

“A large row-boat at last made its appearance, doubling the end of the reef near the small fort, which was declared to be that which brings off the pilots. The *patrum-mor*, harbourmaster, in his naval uniform, likewise came on board. A large launch followed the pilot, manned chiefly by negroes, almost naked: the colour of these men, the state in which they were, their noise and bustle, when certainly there was no occasion for it, and their awkwardness, were to me all new.

“The pilot placed himself near to the ship’s windlass; a Portuguese sailor was sent to take the helm, but still the vociferation was extreme; the man seemed to think that, by speaking very loud, he could make the English seamen understand his language; and what with his bawling to them and to his own people, and their noise, the confusion was excessive: however, we doubled the fort in safety, and came to anchor in the upper harbour.”

\* The outer portion of the city of Pernambuco. The middle part is called *Sant Antonio*, and the interior, or western part, *Boavista*.



## PARTICULAR INSTRUCTIONS FOR PERNAMBUCO, ETC.

Having given above the general description of Pernambuco, by Captain Hewett, &c., we now add more particular instructions from the *Pilote du Brésil* of the Baron Roussin, annexing to the same those of a British officer, still more recent.

The true bearing and distance of Cape St. Augustin [Agostinho] from the point of Olinda is S. 17° W. (by compass S. 21° W.) 21 miles.

Cape St. Augustin is the point or landfall which vessels generally make when destined for Pernambuco during the southern monsoon. The coast to the North of this retires half a league to the West, and forms a slender bay (*Gaybú*): at 17 miles northward from the cape is the city of Pernambuco. The middle of this coast is marked by the chapel of *Nossa Senhora do Rosario*, built on an elevation about half a league inland, and having two towers, or steeples, which facilitate a knowledge of the place on coming in from sea. The shore is low, and covered with trees, nearly as far as Pernambuco; and, in coasting along shore, at from two to four miles off, there will be found from 11 to 17 fathoms of water, bottom of sand, with a mixture of broken madrepores.

After having recognised Cape St. Augustin, which is situate in lat. 8° 20' 41", long. 34° 56' 34", you may proceed to the northward, at two or three miles from the coast, until you raise the Fort Picaó and Lighthouse, between the N.W. and W.N.W., then steering for the latter, it may be approached, according to the vessel's draught, until you bring the cocoanut tree of Olinda, standing between the two highest edifices of the city, nearly N. by E. On this bearing you will be at 700 or 800 toises (say three-quarters of a mile) from the lighthouse, and you may anchor in 6 or 7 fathoms, bottom of sand, with shells and patches of coral; bad bottom it is true, but which it is almost impossible to avoid entirely in the Road of Pernambuco.

When coming to the port during the northern monsoon it is proper to make the coast a little to the North of Olinda Point, which is in latitude 8° 1' S., and longitude 34° 50'. From this point the coast, as already noticed, is bordered with a rocky shelf and breakers, extending outward about two miles, and should, therefore, be passed at the distance of three miles, in 8 or 9 fathoms, and until you bring the lighthouse and Fort Picaó at several degrees to the North of West; thus avoiding the *English Bank*, a flat of sand and rock, above described, and over which the sea breaks in adverse weather.

The Road of Pernambuco is dangerous in such weather, as the swell is then very strong. The anchorage is on a rhomb to the West of the meridian of Olinda Point, at less than half a mile from the Kay or Recife of Pernambuco; and there is some risk of driving on shore with a strong wind from the points between S.S.E. and E.N.E., more particularly in the adverse season or southerly monsoon, March to September, when the winds are frequently violent.

The northern monsoon is, at times, not more favourable than the other to the surety of vessels which anchor here. Easterly winds are more frequent than those from the North, especially on the approach of new and full moons; and although, in this season, the weather is commonly fine, and the breezes weaker than those of the opposite season, it is requisite to take all precautions against accidents; and the first of these precautions is not to anchor too near the land.

We have noticed that the bottom of the Road of Pernambuco is of bad quality; in fact, this anchorage, with a cable liable to be cut, offers no security; and vessels employed here should have iron cables: for the best serving or rounding would protect the others but very imperfectly from the effect of the great quantity of corals, madrepores, and lost anchors, interspersed over the bottom of this roadstead.

Vessels commonly moor E.N.E. and W.S.W., in order to have a long warp toward the offing, as well as to be more firmly situated, and more ready for getting under weigh. It is prudent to have the sails and all things so disposed as to get under weigh promptly, should it be required. In the contrary case, drop an additional anchor in the evening, which you raise next morning.

Should you be obliged to remain some time in the Road during the southern monsoon, it may be convenient to have two anchors ahead toward the offing, and one anchor on the poop, to drop toward the W.N.W., in order to hinder the vessel's drifting during the calm which often succeeds a squall. The last anchor serves to resist the land breeze, which, however, is rare in this season; and not strong in the road in any time of the year.

The Harbour of Pernambuco, formed on the coast by the Recife which borders the shore,

is sufficiently large and deep for receiving a certain number of vessels drawing from 10 to 12 feet of water. This port, as already noticed, is divided into two parts. The first, or exterior port, is named the *Poço*, or *Well*, and is, simply, an anchorage situate at the head of the reef to the North of the harbour. Its entrance is formed by several rocks or flats of detached madrepores under water, and which are probably a continuation of the principal reef. This entrance is named the *Great Bar*, and on it are from 17 to 30 feet at low water. Within it, vessels moor with four fasts, the head to the offing. The ground of the *Poço* is of sand, and the depth decreases toward the shore. This place is open to the wind from the offing, and the sunken rocks at the entrance render it untenable during the southern monsoon. Its military protection consists in the Forts Bruno and Buraco, standing on the beach at 600 toises, or three-quarters of a mile, from each other.

The Harbour of Pernambuco, or *Port of Recife*, properly so called, is comprised between the key of rock and the city, and is named the *Mosqueirão*. It has from two to three fathoms of water, and is sheltered from the sea by the Recife. In this place are from 8 to 6 feet at half-tide; but for entering they must pass over a bar of sand, on which, at low water, the depth is not more than 7 feet. This bar is defended by the Forts Bruno and Picaô; built, the first on the beach, as already noticed, and the other on the extremity of the Recife, to the southward of the lighthouse. The distance of one of these forts from the other is three-tenths of a mile.

The marks for sailing in by the two passages leading into the port of Pernambuco are, 1st, for the *Poço*, or *Well*, a small pyramid built on the beach, surmounted by a cross, and called the *Cruz do Patrao*, in a line with the church of *St. Amaro*, on the continent, which is surrounded with cocoanut trees. These are a little way up the country, and clearly seen. The bearing of the objects in one is nearly true West. But, before the leading mark is brought on, on approaching from the offing, you must avoid the English Bank by observing the precautions already mentioned. From the *Poço*, or *Well*, this bank bears nearly East, less than a mile. Its shallow part is indicated by breakers. Having entered, you will see all the interior of the harbour, having the lighthouse to the South; and, by proceeding S. by W. [*S.  $\frac{1}{2}$  W.*] you gain the port of *Mosqueirão*.

2ndly. Smaller vessels commonly take, on entering, the pass immediately to the North of the lighthouse, standing on the Recife; the direction for which, as before shown, is to bring the two southern turrets of Fort Bruno in one, and keeping this mark on, with 18 to 15 feet of water, until you see the western or the inner edge of the Recife, with Fort Picaô to the South, when you proceed along it until you have entered the harbour; and, having advanced to a proper distance, you make fast on the larboard side.

The city of Pernambuco is divided into three parts, in the direction of East and West, and separated from each other by the waters of the *Capiribe* and *Biberibe*, but connected by bridges. Pernambuco, the capital of the province of this name, is visited principally for its cotton, which, for its quality and superior preparation, is esteemed as the best in Brasil. The harbour is protected from the violence of the sea by the Recife, the lower parts of which have been raised to the level of the others, like a continued quay. This natural wharf shelters vessels in the harbour from winds in the offing, which are, at times, very strong, but they rarely cause damage to vessels well moored, though in a basin of small extent.

Navigators find at Pernambuco all kinds of succours. Here they may careen, re-mast their vessels, and repair all damages. They find, also, all refreshments and supplies of provision and ammunition; but at a price higher than in Europe. The water is good, and easily procured, either at a little way up the Capibaribe, to the South, or at Olinda on the North, by means of the waterboats, which take it on board the vessels in the port or in the road. Firewood only is comparatively dear.

The predominant winds in this road are those of the tropic, which may be said to blow generally from S.S.E. to N.N.E., with this variation, that, from March to September they approach more from the South (and sometimes even from S.W.) than in the other part of the year. In the latter season they prevail almost without interruption from E.N.E. to N.N.E.

The land breeze, regular in the port, is very light in the road, and is rarely felt beyond the Recife, where the breakers always deaden it; but it weakens or lulls the first winds coming from the offing. The strongest of these, both outside and in the port, are from ten o'clock in the morning until five in the evening; that is, in all the day, during the absence of the land breeze.

The temperature (before noticed) is commonly high at Pernambuco; especially during the night, and until nine or ten in the morning: then, after several moments of calm, which are very oppressive, the sea breeze, rising a little, reaches the coast and refreshes the air, until the moment of sunset. Notwithstanding its heat the climate of Pernambuco is considered as generally salubrious.

The tides are irregular in the port, probably because the rivers are affected by local circumstances, which increase or diminish the volume of water. The reflux or ebb is, however, perceptible after the sea has ceased to rise; and seems to accord with the lunar influence. The difference of level between high and low water is commonly 6 feet; but it attains 8 feet at the syzgies, and then the strength of the stream in the port is about two miles an hour. Under the latter circumstances it is high water at 4h. 30m. afternoon, or very nearly so. In the road the tides are always irregular, and the currents are determined by the prevailing winds at sea.

The variation of the compass near Pernambuco, in December, 1819, was  $4^{\circ} 48' W.$ , near Cape St. Augustine,  $4^{\circ} 30'$ .

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### *Remarks on, and Instructions for Pernambuco, by a British Navigator, 1835.\**

*Under favourable circumstances* a ship from the eastward, bound to Pernambuco, should get into the latitude of the lighthouse, or  $8^{\circ} 4' S.$  By night the revolving light will be seen, as already noticed. On approaching the coast the lead should be used; soundings may be gained at about the time the land is first seen from the masthead, about 50 fathoms, sandy bottom.

*On falling in to the northward of the port*, the lighthouse not in sight, care should be taken not to run too far in, or into less than 20 fathoms, until daylight. The town of Olinda, being seated on an eminence, cannot be mistaken. On approaching it in the morning, from the eastward, its appearance is beautiful. Having Olinda in sight, with its churches and other large buildings, the next objects will be the lighthouse, Fort Picaô, Fort Bruno, the shipping, and arsenal, in the Port of Pernambuco.

You now bring the lighthouse to bear W.N.W., and run in upon that direction, thus avoiding the Olinda and English banks. You may anchor in 8, 7, or 6 fathoms, at one, two, or three miles from the lighthouse, but do not bring this to bear more to the northward than N.N.W., as within this line the bottom is rocky, and there is a shoal at about a quarter of a mile from the reef.

To a stranger approaching northward of Pernambuco, it should be known that the land will appear verdant as far to the northward as *Itamaraca*, and no appearance of white banks of sand. When abreast of the North end of this island three large cocoanut trees will be seen to the W.N.W. *Olinda* may be seen from the masthead at the same time, to the S.W., and the white fort, or battery of *Paô Amarelo*, at seven miles to the northward of Olinda. Should the wind prevent a vessel from lying along shore on the larboard tack, stand off until midnight or morning, as the wind then is apt to blow at right angles with the shore, which will enable her to gain her port.

If falling in to the southward, about Cape St. Augustine, observe that the land is very remarkable, having ten or twelve cocoanut trees on its summit, and reddish banks of sands. There is, also, a large building among the cocoanut trees; but the most remarkable objects about this part are some white cliffs, about three miles to the northward of the cape. These cliffs are rugged and craggy, and appear like clothes drying at a distance. *Olinda* will be seen to the N.W.

*Should a vessel fall in to the southward of Cape St. Augustine*, a large mountain [*Monte Sellada*] will be seen, having the appearance of a saddle, and also two flat mountains, one on each side of the Saddle Mountain, bearing in a westerly direction.

The chapel on an eminence, *N. S. do Rosario*, with its two towers or steeples, between 7 and 8 miles southward of Pernambuco, has been already noticed.

The HARBOUR.—Pilots are generally in waiting to conduct vessels into the port; but,

\* First given in the *Nautical Magazine*, No. 40, which is illustrated with beautiful views of Pernambuco and Bahia.



should none be ready, get the vessel (if at anchor) under way about two, or one and a half hours before high water. Should the draught be not more than 16 or 17 feet, the *Small or Picaô Channel* may be used. The leading mark through are the two South turrets of Fort Bruno in a line, as shown in Captain Hewett's survey. This will lead within twenty yards of the rock lying to the North of the lighthouse: but, as this rock is steep-to, a vessel may luff close round it, and keep close to the reef, if the wind permits, until within a cable's length of the lower tier of shipping; then drop the larboard anchor, and await the order of the harbourmaster or pilots.

*Large vessels* discharge and load in the channel between the harbour and English Bank, at about three-quarters of a mile to the N.E. of the lighthouse.

*Vessels lie moored in Pernambuco*, with two anchors down, from the side next the town, and also two ropes or chains to the reef. Four vessels generally lie in a tier, and are sheltered by the reef, which is formed by nature, with the exception of a few stones which have been laid down a little above Fort Picaô. The water within the harbour is generally smooth, except at the top of high water, spring tides, when there is not only a heavy swell, but also a strong current rushing over the reef. In this case good ropes or chains should be fastened to the reef. This lasts about two hours only at each high water, during a few days, with spring tides.

*On leaving Pernambuco* great care should be taken not to stand too near the Olinda Reefs, as there are some detached rocks about the outer edges. The greatest danger of coming in contact with these dangers occurs when leaving the harbour late in the afternoon, with a wind which prevents sufficient tacking. In daylight, however, there is little to fear, as the broken water can be seen; but, after the first tack, night may approach, so that the breakers cannot be seen; and also a strong northerly current according to the wind, which requires caution. The safest way, in this case, is to keep well to the southward.

The marks for clearing the Olinda Reefs, in the day time, are the *Camona* or highest church, in the district of *Santo Antonio*, open to the southward of the lighthouse; or rather, the church with two steeples, lying a little to the North of the other, which leads a vessel more clear of them. By night do not allow the light to bear any more to the southward than W.S.W. until Olinda bears N.W. by W. or W.N.W., when a vessel will be at a good distance off shore.

*Englishman or English Reef.*—The centre of the bank or reef lies about E.N.E., one mile and an eighth from the lighthouse. The least water found on it was 13 feet at low spring ebbs; the ground very rocky and uneven. To clear the bank to the northward keep the highest church in *Boã Vista* open to the northward of the lighthouse. To clear it to the southward keep the southern turrets of Fort Bruno shut in with the lighthouse. The marks from the shoalest part of the bank are the lighthouse and Boã Vista church in a line, and the largest cocoanut tree at Olinda in a line with an old decayed church, the lowest public building in the town.

This bank or reef is not so dangerous as it has been represented, excepting to vessels of large draught; for when vessels are coming out of Pernambuco it is generally high water, when there is a sufficient depth over it. However, when tacking in the bay at low water, the former marks must be observed; as, also, when coming to anchor, give it a good berth to the southward, as with strong S.E. winds a very heavy sea sets into the bay. When at anchor too far to the northward a vessel may drive on it before she could be brought up. The sea breaks heavy on the bank with the wind from this quarter, the same as on the Olinda and other reefs. On entering or coming out of the harbour with open boats, these breakers should be avoided, if possible, as accidents often occur by the boats getting amongst them.

*The pilotage* in and out of Pernambuco is very expensive, although the pilots have no branch, yet it is customary for strangers to employ them, and even vessels trading to the port seldom refuse them. They are more serviceable in mooring and unmooring the vessel than in the service which they render in coming in or going out. They have generally a good boat's crew, and some of them are very expert in diving, to clear away anything that may be foul of the anchor, a circumstance that often occurs; but there is one charge they make, which is for shifting the vessel down from the discharging berth to that of loading, which could be done without their assistance; still they force their service on you, and, under particular circumstances, a master is induced to take them.

*Vessels loading a sugar cargo* in Pernambuco should not load deeper than 14½ feet until they go outside. However, this greatly depends on the wind; for, should it be from the

S.E. quarter, and a good breeze, there is little danger in going over the bar, when drawing 15 or 16 feet, on the height of spring tides.

On leaving the harbour vessels generally begin to unmoor at half ebb, the tide previous to their going to sea, when they have plenty of time to get all their ropes or chains in, and the vessel winded, deck clear, &c. Should the wind be from the S.E., a good breeze, get under weigh one hour before high water, keep at a proper distance from the reef, and make all sail possible; luff close round the rock that lies to the northward off the lighthouse, and observe whether the trees on Cocanut Island, to the southward, open out to the eastward of the lighthouse; if they do, the rocks that lie to the northward of this channel will be passed to windward; then there is only the Olinda reef to be regarded: but should the direction of the wind be such that these rocks cannot be weathered, which can easily be seen by the cocoanut trees not opening to the eastward of the lighthouse, (or of the shipping in the harbour,) in this case these rocks must be kept on the starboard hand or passed to leeward, and therefore beat through the wide channel, as above directed.

It is to be observed that all these dangers, being to the northward of the lighthouse, are nearly in a direct line with the main reef; so that, when the shipping in the harbour are open to the eastward of the lighthouse, a vessel is then clear of them to the eastward; and, by having them open to the westward, the vessel may run along with safety, passing to leeward of them all. Again, by keeping the shipping in a line with the lighthouse, you would pass on the shallowest part of them.

Should the wind be so that vessels cannot lie along the reef, warping down becomes necessary; and, before sail is made, they ought to be close down to Fort Picaô. Masters, or rather pilots, not taking this precaution, often get to leeward, a circumstance frequently attended with danger, and which is sometimes fatal. This was the case with the brig *Alcides*, which was wrecked in 1832, abreast of Fort Bruno.

When ships are obliged to anchor outside, previous to their entering the port, which is generally the case, the masters usually go in with a boat, either to the Royal wharf, or else alongside of a visit boat, with one mast and flag, lying inside the reef, a little above the lighthouse. The cargo is generally brought off in boats, or large launches, and attended with very little risk, as the distance is not great, and not much swell. From this advantage, and the regular sea breeze, the wall formed by nature, with its strong guns for mooring posts, that are proof against any accident that may occur, and the healthiness of the climate, this port may be considered one of the safest and best on the Brazilian coast.

Here it is high water, on the full and change, at half-past four. The vertical rise of spring tides is 8, and of neaps, 5 feet. The highest tide is generally two days after the full and change.

## II.—PERNAMBUCO TO BAHIA, OR THE BAY OF ALL SAINTS, INCLUSIVE.

CAPE ST. AUGUSTIN, with its trees, red cliffs, church, &c., have been already noticed in page 109. In the bay of Gabu, northward of this cape, there is anchorage within musket shot of the shore, having a passage to it formed by the reefs.

### POSITIONS OF THE PRINCIPAL POINTS, ETC.

	Latitude.	Longitude.
CAPE ST. AUGUSTIN; the summit . . . . .	8°20' 41"	34°56' 34"
Rio Ipojuca; Entrance . . . . .	8 23 2	34 58 24
Mount Sellada; Southern piton . . . . .	8 25 19	35 10 56
Village of Maracay . . . . .	8 29 26	34 59 30
A Chapel . . . . .	8 30 36	35 0 58
Isles of San Aleixo . . . . .	8 35 49	35 0 38
Rio Formosa; Chapel at the Entrance . . . . .	8 39 40	35 4 34
Fort of Tamandaré . . . . .	8 43 24	35 4 52
San Bento . . . . .	9 4 56	35 16 49
Village of Quinta . . . . .	9 16 18	35 22 37





Above the point of Meracahipe is an hermitage, and between Cape St. Augustin and this point are successively the small hamlets of *Muracay* and *Gallinhas*.

The little islets of *St. Aleixo* lie in lat  $8^{\circ} 35' 49''$ , nearly off the entrance of the little river of Serenhen; at a league and a half to the southward of which is another little river, *Rio Ferosa*.\* The two islets in a line bear N.  $60^{\circ}$  W. true. There is no passage between them and the land, near to which they lie. To the N.W. of the islets, and at several leagues inland, may be seen the *Serra Sellada*, above described: and at several miles to the East of them Cape St. Augustin may be distinctly seen; as it bears from them N.  $18^{\circ}$  E. true, 16 miles.

Captain Monteath passed the islets on the 20th of December, 1825, at the distance of three-quarters of a mile; the soundings regularly decreasing from 12 to 10 fathoms, clayey bottom.

**TAMANDARE.**—At about three leagues to the S. by W. from the islets of St. Aleixo is the little *Port Tamandare*. It is against an opening in the reef which forms an anchorage, and which is larger than most of the openings of this nature. The space and the depth are sufficient for large vessels, and the coasters say that it will accommodate three or four frigates. The depths are from 4 to 6 fathoms. A fort on the coast defends the entrance and interior anchorage. The position of this fort is given by the Baron Roussin as lat.  $8^{\circ} 43' 24''$ , and longitude  $35^{\circ} 5'$ .

The Roadstead of Tamandare is the best place for shelter between Pernambuco and Bahia, yet it is exposed to all winds of the segment from South to N.E. by E., and vessels are not protected from the sea by the reef; for it, in several places, is very little above the level of the water.

In proceeding along the coast, from N.E. to S.W., you pass successively before the bars of *Camargibe*, *St. Antonio*, and *St. Antonio Mirim*, which admits jangadas only. On the parallel of  $9^{\circ}$  S. is the *Barra Grande*, and in  $9^{\circ} 11'$  *Port Calvo*, where rivulets facilitate the transit of goods, but have no depth at the entrance.†

**PORTO CALVO** is small, but will admit vessels of 120 tons, and may contain six of that description. The town of Porto Calvo, upon the Una, is now a small place with large houses, and a city-like appearance. It suffered much in the rebellions, and contains about 2,000 inhabitants. It still carries on some trade, and appears to be gradually recovering its former prosperity. Along the coast, at the distance of about half a league, is a ledge of reefs, having an interval which constitutes the entrance, and which has a depth of 5 and 6 fathoms. Within is a depth of 3 and 4 fathoms. Strangers must cautiously proceed with the lead, and will find, when within, that the water is smooth, with bottom of sand.

The name of **BARRA GRANDE**, given to an inlet situate to the N.E. of Porto Calvo, as shown on the chart, may induce a stranger to suppose that it is a fine harbour. We have, therefore, to notice, that it has only three fathoms, with reefs to seaward, and a flat rock, covered with water. Its distinguishing mark is the high land of St. Bento, on the South side, and above it, the church of St. Bento.

From **PORTO CALVO** to the **RIO CAMARAGIBE**, three leagues to the S.W., the land is level, with low brushwood; the reefs half a league from the coast; the beach of white sand. On the South side of the Camaragibe, stretching along shore, is a range of bare hills, or cliffs of red sand.

Near the river St. Antonio-mirim (or Little St. Antonio) is a range of red cliffs, half a league in length, and three small round hills, which stand on its northern side.

**MACEIO**, or **MAÇAYO**.—The next place of any consequence on this coast is **MACEIO**, or **MAÇAYO**, a village situate on the western side of a wooded bluff. Here the shore trends in an East and West direction, and upon it, to the South of the village, is a small

\* Upon this river is a town of the same name, the commerce of which is considerable; its population is about 2,000.—*Mr. Cowper*, 1846.

† *Mr. Cowper*, in proceeding along the coast, says:—"He passed the dangerous quicksands of the Menon River on horseback, the village and river of Pioca, the bar, river, and village of St. Antonio, and some most beautiful cretaceous cliffs, the only break to the monotony of sandhills which he had seen on the coast of Brasil; they are about 100 feet high, of a blue and white colour, ruptured occasionally into deep, picturesque ravines. At this point he left the coast, and proceeded up the Camaragibe to a bustling little commercial town called the Passo de Camaregibe, with about 1000 inhabitants. Good building timber of various kinds grows in its neighbourhood.

"The exportation of timber is, however, prohibited, except under special licence from the imperial government, which is not conceded for ship-building timber."

fort near the mouth of a rivulet; before it is an open roadstead, protected on the East by reefs of coral, but which are covered at high water. The place has been surveyed by Captain the *Hon. F. F. de Roos*, R.N., who places the fort in  $9^{\circ} 40' \text{ S.}$  and  $35^{\circ} 41' \text{ W.}$

There is a powder magazine on the wooded bluff East of the town, which is white, and may be seen at four leagues off. On advancing nearer, the church will be seen. The anchorage is good in 5 fathoms, sand and clay, with the town and fort nearly in a line, and bearing N.N.W. at three-fifths of a mile from shore.

The outer point, East of Maceio, is the *Ponta Verde*, or *Green Point*, which is covered with cocoa trees, with breakers over its rocky extremity. To those approaching from the N.E., Maceio is hidden by this point; but on rounding the reefs to the westward it comes in sight. At a mile from all this coast are found ten fathoms of water, bottom of madrepores, and the depth appears to increase gradually to the distance of 4 to 6 leagues, where there are from 25 to 30 fathoms; and in fine weather a vessel may anchor on almost any part of the bank.

To the northward of Maceio, far up the country, are seen the *Serras de Marambaya*, a chain of mountains discernible at 15 leagues off, and are conspicuous over the adjoining land, which has no distinguishing mark. The country here is very fine; the coast generally of sand, frequently covered with cocoanut trees, and small portions of a steep reddish shore. The middle of the mountains of Marambaya is in latitude  $9^{\circ} 25'.$

The village of Juragua, amidst cocoanut trees, occupies the shore from the Fort of Maceio, above mentioned, to another fort at the distance of a mile to the East. The coast between forms a curve, and is very low. At a mile to the southward of the eastern fort is a *Bairo*, or detached shoal, which breaks with a high southerly wind. Good water may be obtained here.

It is high water here, on the full and change, at 4 h. 30 m. Spring tides rise  $8\frac{1}{2}$  feet. Variation of the compass,  $4^{\circ} \text{ W.}$ , 1832.

The port of Maceio is protected by a reef of rocks, visible at ebb tide. The beach within it forms a semicircle of white sand. Immediately back from the beach are a row of white houses, with here and there groves of coqueiros, bearing fruit. Upon the hill above stands the city of Maceio, with a population of about 3,000. There is not a convenient landing place in its harbour.

In 1844, Maceio contained two churches, in miserable repair, and two more in the process of erection, but no convents. Its other public buildings were a theatre, a government house, barracks for soldiers, and a camara municipal. The theatre was ornamented outside with rude crosses and forms representing stars and circles; apparatus for illumination was affixed to all these ornaments. Notwithstanding various evidences of popular interest in this edifice, it stood open and apparently deserted, one of its sides having yielded to the force of gravitation, or having been pulled down for repairs. Most of the houses in Maceio are built of *taipa*, and, with one or two exceptions, do not exceed a single story in height. Children who are *not free* run about naked: free women employ themselves in lace making. The shops are described as wretched. The place altogether is described as dull and uninteresting. There is an English and foreign burying ground, but Mr. Kidder says, "its gate, made of wood, had been suffered to decay and fall in pieces, and thus the enclosure was left open and desolate. Many of the houses in the extremities of the town are very small, and covered only with a thatch of the cocoa palm leaves."

The exports of the province of Alagoas are chiefly sugar, cotton, hides, Brazil wood, and rosewood. Sugar, in large cases, is brought from the interior, upon rude carts, drawn severally by six or eight oxen. The cotton comes in bales of about 180 pounds each. Of these a horse carries one on either side of a pack saddle. Mules have not yet been introduced into this region as beasts of burden, although it is thought they would be more serviceable than horses. Of late the greater proportion of the productions of the province has been exported by way of Bahia and Pernambuco. Formerly foreign shipments were more frequent, and a greater number of foreigners resided in the place.

The following remarks on the port of Maceio, by the *Hon. F. F. de Roos*, were originally given in the *Nautical Magazine*, April, 1835.

"On approaching Maceio, when at the distance of twelve or fourteen miles, a small white building can clearly be made out. It is a powder magazine, and is situated on a wooded bluff, which overlooks the town and harbour. The land may also be distinguished by a red spot on the face of the cliff, about five miles to the south-west, and by a white chapel, with

two towers, in the same direction: moreover, Mount Barriga, at a distance in the interior, may be observed. It stands alone, and is higher than the land which forms the coast, but is otherwise not remarkable.

"Maceio, being the only convenient anchorage between Bahia and Pernambuco, enjoys a considerable commerce, and has an extensive communication with the interior. Many English vessels annually touch here. Supplies are to be had at a moderate rate, and excellent water can be obtained in the adjoining harbour of *Pajucara*, at a well near the beach.

"The port is formed by the point of the Barrier Reef, terminating abruptly, which extends along the shore here, a sandy beach, forming the continuation of the coast for some miles to the southward. It is an open bay, but affords protection from the prevailing winds, which blow from N.N.E. to E.S.E. throughout the greater part of the year.

"The men who fish in the *jangadas*, or sailing rafts, which are constantly to be met with on this coast, are good pilots; but there is a regular harbour master at the village of *Jurugua*, who will come off to bring ships, on their firing a gun.

"The anchorage of his Majesty's sloop *Algerine* was in five fathoms and a half, the end of the reef bearing S.E., and the covered wharf, or trapiche, E. 58° N., by compass. From this anchorage the sea is open from S.E. to S.W.  $\frac{1}{2}$  W., bottom sand and clay; a quarter of a mile in the direction of trapiche are moorings laid down for the trading packets from Pernambuco and Bahia, which call every fortnight.

"Persons acquainted with the port generally approach it, keeping within a quarter of a mile of the reef, and in this manner rounding the point; but strangers are not recommended to do this, as the soundings are irregular, and the *Baixo*, with only fifteen feet of water on it, is to be avoided. The safe rule is not to bring the powder magazine to the eastward of North, till you have passed the point of the reef; you may then haul into your anchorage.

"In the nine summer months this port may be deemed safe, but in June, July, and August, when the southerly winds prevail, it is very much exposed. No English merchant vessel has ever been wrecked here, though one brig, not long since, drove and bumped her rudder to pieces in a southerly wind. Instances of Brazilian wrecks frequently occur.

"There is an adjoining harbour, (to the East,) formed by the same reef, called *Pajucara*, which affords shelter to small vessels only. It is shaped like a basin, the entrance being near the centre. It is very shallow, and seldom used, as, with the wind to the northward of N.E., a vessel cannot fetch in. One corvette and two brigs of war have been built in *Pajucara*."

In some remarks on Maceio by Captain Drinkwater, R.N., it is noticed that the land to the northward is of moderate height, abounding in red cliffs. H.M. ship *Doris* anchored in 8 fathoms, rock, and broke the anchor in heaving up three hours after. A little farther in the bottom is clearer, as seen by the sludge. A swell sets in continually.

ALAGOAS.\*—The Bar of *St. Miguel das Alagoas* (of the Lakes) is the mouth of a small river which comes from the N.W., and on the northern border of which is the little town of *Sta. Anna*.† It is under this town that the coasters go to take charge of the sugar, cotton, and building wood produced in the country, and brought from the adjacent heights; several roads for the conveyance of which may be seen.

• The small province of Alagoas was formerly included within the limits of Pernambuco, but was cut off from the latter, in order to reduce the province of the Pernambucans, of whose independent spirit Rio de Janeiro has been always jealous. Alagoas derives its name from the lagoon, on which stood its old capital. The coast is very flat, with sandy beaches interrupted by red clay cliffs, eighty to ninety feet high. Maceio, the capital, is fifty-two leagues to the South of Pernambuco. Mr. Cowper, the British consul at the latter place, who visited Maceio in January, 1846, says, the town is well built, and contains about 5,000 inhabitants; and that the port is sufficiently extensive. The trade of this place consisted, in 1845, in exporting produce, to the value of about 112,000*l.* sterling, exclusive of Brasil wood (of which the crown has a monopoly), to the estimated value of about 12,000*l.* sterling. The direct European imports of manufactured goods amounted in value to 8,250*l.* sterling (all from Great Britain); and of the exports, the value of about 95,000*l.* sterling was exported in British vessels; twenty-five British vessels entered the port, and five belonging to other countries. A revolution had previously broken out in the province; it was suppressed, but not until the place was sacked by the party called the *Sisos*, or *Smoothers*, who were then established in Pará; the president of which has put down the press. The mere legislation of the province is considered a farce. Immense quantities of oysters abound in the lake of Alagoas, and constitute a cheap article of food. Some parts are very deep, but, generally, the water is shallow. The land around the lake is devoted to the cultivation of sugar, with here and there a small town or *provoçao*.

† Alagoas is situated on a picturesque hill on the borders of the lake, but grass is growing in the streets, and it is rapidly falling to decay. Its population is about 3,000.—Mr. Cowper, 1846.



The Bar of St. Miguel admits very small vessels only. The same is the case with *Porto Francez*, a small anchorage at about two leagues more to the North, against the hamlet of *Remedios*, and at the base of the *Point Massaveiro*, forming the South side of a large valley occupied by the Rio das Alagoas, and by the two lakes which give their name to that river. Craft drawing six feet water may enter Porto Francez, the only point of communication from the lakes to the sea. The larger coasters stop in the exterior anchorage for receiving, by the jangadas, the merchandise of the country.

**JIGUIA.**—At five leagues to the south-westward of Rio St. Miguel, in about  $10^{\circ} 2' S.$ , is the Bar of *Jigua*. The coast between is about 80 feet in height, nearly horizontal, and terminating on the sea by several reddish cliffs; the interior, which is woody, presents an agreeable aspect.

The Bar of *Jigua* is not always navigable for the coasters, and they more frequently anchor outside; but, with high tides, it allows the passage of the smacks, of 80 tons, built from the abundant wood produced on the sides of the river.

On proceeding southward from *Jigua* you pass the mouth of the little River *Porim*, on which is the village of *Conceicao*, and at the distance of four leagues thence is the bar of *Cururippe*, off which, at the distance of about three miles, is a rock, named *Dom Rodrigo*, which is probably connected to the chain of reefs. On other parts of this coast you may approach to the distance of two miles, where there is generally from 10 to 13 fathoms of water.

The RIO SAN FRANCISCO is a broad and rapid river, but shallow, especially at its entrance. Pimentel says that it is subject to great inundations, in the months between September and March; and that, during this season, its current is so strong that it cannot be stemmed by an eight-oared barge. Small craft only can enter it, partly owing to the rapidity of its stream, and partly to the shoals at its entrance. The point *Manguinha*, at the mouth of the river, is situate, according to the Baron Roussin, in latitude  $10^{\circ} 28' 50''$ , longitude  $36^{\circ} 21' 15''$ .

The intermediate land between the Alagoas and Rio San Francisco is low and sandy; the shore, bordered by the Recife, presenting small openings and inflections, known to the coasters only.

The entrance of the river is bordered on the South by the point *Manguinha*, a low, flat point covered with mangroves. It projects to the E.S.E., and heavy breakers extend seaward a mile and a half. The North point, also very low, is of quicksand, without vegetation; the coast northward of it is of the same nature, and there are breakers as on the South. The passage in is between the breakers, and vessels anchor before it in order to engage a pilot, whose assistance is indispensable.

According to the pilots the mouth of the river has a depth of 12 or 13 feet at high water. The country here is very populous, and abounds in sugar, cotton, building wood, tobacco, &c. The most considerable town of the vicinity is one called *Penedo*.

The Rio de San Francisco takes its source near the Villa Rica, about 80 leagues to the W.N.W. of Rio Janeiro; it is one of the largest rivers in Brasil, and is described as navigable in the greatest part of its course. It extends from the South to the North, in nearly a parallel direction with the coast; but, traversing a flat country to the approaches of its mouth, it loses both depth and strength.

At about two leagues to the W.S.W. from the mouth of the Francisco may be seen a small opening on the shore, called by the country people *Barra Nova*. There is a discharge from the river during the wet season, but even then it is not navigable.

From the Rio San Francisco to the S.W. the coast continues to be very low; but we now come in sight of the great inland mountains *Pacatuba* and *Itabayanna*; the latter being to the West in about  $10^{\circ} 50' S.$ , and its highest summit is stated to be in  $10^{\circ} 47' 10'' S.$ , and long.  $37^{\circ} 23'$ .

Here it becomes dangerous to approach too near the shore, as with a strong south-easterly wind it would be difficult to gain an offing. The beach is flat, and the bottom near it of stiff sand, in which the anchors hold firmly: but this should not induce a vessel to come too near. At the distance of between 3 and 12 miles from land the depth increases to 26 fathoms, with the exception of a spot 6 miles to the South of Rio Francisco, where 36 fathoms have been found.

The RIVER COTANDIBA, which winds far up into the country between the mountains, lies on the parallel of  $11^{\circ} S.$  At a short distance within its entrance it receives the

waters of several smaller rivers; but it has not more than 6 or 7 feet of water on the bar: nevertheless it is much frequented by the coasters for the products of the country, as sugar, cotton, tobacco, &c.

When you have brought the bar to the West, you will descry the Mount *Aracaju* at several leagues to the N.W., and to the West is the high land called the *Morro de Telha*. The first is remarkable from its form in the direction of the coast, with a cut or opening at its northern extremity: the second is in form of a cardinal's hat.

VASABARRIS, or RIVER OF SERGIPE.\*—The Bar of the Vasabarris, or River of Sergipe, is ten miles south-westward from that of the Cotandiba. When advancing to this place, from the East or the South, you may see three small hills, of equal size, covered with bushes, situate about three leagues to the S.W. of the entrance, and which are named *os Tres Irmãos*, or the *Three Brothers*. The town of Sergipe, built at the foot of these hills, on a conflux of this river, has given its name to the stream.

The mouth of the river is formed on the South by a long point of white sand, and is, as well as the North point, encompassed by violent breakers, which render an entrance into it very difficult. Under the most favourable circumstances the channel has only 10 or 12 feet of water. The South point of the entrance is in latitude  $11^{\circ} 10' 30''$ , and longitude  $37^{\circ} 9'$ .

RIO REAL.†—The mouth of the Rio Real is seven leagues S.S.W. from that of Vasa-

\* The PROVINCE OF SERGIPE DEL REY derives its name from the River Seregipe, an aboriginal name, on which St. Christovao, the capital, was first established, but removed afterwards to another situation. Its conquest and colonization were commenced in 1590, and was granted to Christovam de Barros, the deputy governor of Bahia, as a reward for his services in reducing the natives. It was long considered a district of Bahia, but had its *ouvidors* about the year 1696. Having less natural advantages for commerce, this province has not made the same progress as the other maritime captaincies. Along its coast there are no capes, islands, or good ports. Its rivers have bars which are generally more or less dangerous, and afford little shelter, except to small vessels. The surface of the province is generally flat, there being scarcely a hill or mountain of any considerable elevation. The Serra Itabajanna, between the Rio Real and the Vazabarris, which, though more than twenty miles from the coast, is visible at a great distance from the sea. Valuable Brasil and other woods grow on this serra. Casal divides the province into eastern and western. The former, in consequence of its woods, is called *Mattas*; the latter, which includes the larger portion of territory, has acquired, from the sterility of its soil, the denomination of *Agregates*: the eastern part of the province yields sugar and tobacco, and the western is chiefly devoted to rearing cattle. A few *aldeias* on the River San Francisco, its northern boundary, are the most cultivated spots. In the eastern part four settlements have been named towns, besides Sergipe or St. Christovao, which, being the capital, ranks as a city. It is situated on an elevation near the River Paramopama, an arm of the Vazabarris, eighteen miles from the sea. *Sumacas* ascend to it, and take in sugar and cotton. It contains one or two convents, two chapels, a misericordia, a townhouse, and a large bridge; all built of stone: it has plenty of good water. But the most populous and the busiest settlement in the whole province is or was, some time ago, the *povoação* of Estancia, five leagues from the sea, on the River Piauihy, which falls into the Rio Real, by which *sumacas* ascend to it. None of the rivers are navigable for large vessels, and the entrances of all are dangerous.

The commerce and industry of Sergipe and Bahia are so intimately connected, that the following statement by the French consul of establishments, &c., in 1843, includes both, viz., 728 sugar engenhos, 172 distilleries, seven snuff and fifty-five cigar manufactures, one paper, four soap, four candleworks, one cotton factory, seventy-eight saw-mills, eleven ship-yards, nine printing presses, and ten newspapers.

† The PROVINCE OF BAHIA, including the old captaincy *dos Ilheos*, extends from the Belmonte to the Rio Real, which divides it from Sergipe del Rey, being about 300 miles in length. On the West and north-west it is separated by the River San Francisco from Pernambuco; while, on the south-west, it bounds on Minas Geraes. It is divided, like Pernambuco, into the comarcas of Bahia, Ilheos, and Jacobina, the former two comprising the coast, and the latter the western part of the province.

With the exception of the descriptions of Prince Maximilian, and Mr. Henderson, which in many instances are now obsolete, we have but little satisfactory information respecting the interior of this province. Mr. Kidder confines his account chiefly to the city of Bahia, and the British consul has not transmitted any accounts of the internal parts. Travelling across the province from Ilheos to Minas Geraes, primeval forests, mountains, hills, and plains are traversed. There are scattered villages during the route; and canoes ascend, though with great difficulty, and often danger, some of the rivers. Cultivation is not described in a flourishing condition in the province, although it is susceptible of the greatest extension and prosperity.

Its commerce is represented both by the British and French consuls, and by Mr. Kidder, to have been for some years on the decline. The British consul considers the diminished importation of flour (about one-half) as one indication of decline in the means of the inhabitants. The diminished sale of European manufactures he attributes to the same cause, and to the failure of agricultural crops, and he attributes the consequences of the revolutions of 1837 and 1838 as other causes. The trade of Bahia has also lost much of the exports of Sergipe and Alagoas, where the merchants of Pernam-

barris. This is a river which proceeds, in a long course, from the interior, and inland is divided into many branches. Seen from the offing the mouth presents nothing remarkable, but the breakers on each side. A strong current sets outward from the river.

The southern point, called *Mango Secco*, is an extension of a beach of white sand, called by the pilots the *Prancha*, or Plank of Rio Real. Within the bar the river turns to the S.W., and afterward receives a number of others. From sea, at about two miles off, are seen a number of huts in the environs of the bar; over the latter there are said to be only 15 feet of water, with high tides. The swell is heavy, and the passage always dangerous, and to be attempted only by the boats and pilots of the country.

All the coast extending from the Rio St. Francisco to the Rio Real is low, sandy, partly covered with bushes, and variegated with little woody hills. The ground without the *Recife*, or line of rock, is generally clean, and between 2 and 10 miles off the depths are from 9 to 30 fathoms, bottom of oaze, sand, and broken madrepores. The last quality of bottom is generally the farthest from shore.

ITAPICURU.—At 7 leagues S. 30° W., *true*, from the bar of the Rio Real, is that of the *Itapicuru*, which is of less consequence. According to the pilots it has only 7 or 8 feet over it with high tide, and it is obstructed by breakers, which render an access dangerous; no distinguishing marks being seen from the offing. On bringing it to the West the opening may be seen between downs on the right and left, and there is a hamlet on the South side at some distance within the entrance. The only vessels which enter are the decked boats and jangadas or rafts of the country, which are insubmersible.

*From the Bar of the Itapicuru* the coast trends in a more southerly direction to and beyond the parallel of 12°. A series of small hills, called the *Oiteros de San Miguel*, borders the coast, commencing at 6 or 7 miles from the Bar of the Itapicuru. Nothing remarkable is seen on the coast for a distance of nearly twenty leagues, except the little mount *Massarandupio* in 12° 24' S., eastward of which several rivulets fall into the sea. Along the greater part of the coast are the reefs, and a strand of white sand.

In the bay formed by the coast between the Rio San Francisco and the Rio de Sergipe, the sea, in all seasons, rolls violently inward; and more particularly when the wind sets in upon the coast. Many ships have been lost here; and, as it is so dangerous, all who pass should keep off to a sufficient distance.

In lat. 12° 32½', long. 37° 58½', is the tower of *Garcia da Vila*, the most remarkable object of this part of the coast; it is a sort of fort, on the rising land, situate among trees, and having a signal post. All the shore may be approached to the distance of a mile, in 11 to 14 fathoms, bottom of sandy oaze and broken madrepores or coral. The depths increase quickly, and at 10 miles off there is no bottom at 40 fathoms. In latitude 12° 30' no bottom is to be found at 60 fathoms, 8 miles off.

*From the tower of Garcia da Vila* the coast trends S.W., to the point of *Itapuan*, on an extent of eleven leagues, and presents nothing but sandy downs, varied only by bushes and cocoanut trees. The *Recife*, or border of rocks, continues all the way, and many are always above water, appearing like islets: those, in particular, about Point Itapuan are seen detached from the coast. In this parallel, latitude 13°, at twelve miles off, no bottom is to be found at 100 fathoms.

The *Baron Roussin* says that, on all the extent of coast between the parallels of 10° and 13°, we have found that the winds of the northern monsoon have daily variations, a knowledge of which is useful to those bound northward. During the night the land breeze ceases; but this is seldom felt beyond the reefs. On the approach of day, however, the breeze freshens and blends with the winds of the offing, which seem attracted by the North coast toward noon: after this hour the wind becomes more easterly, so as to make an angle of about two points of the compass between that of the morning and that of the evening. It follows that the borders are affected by these varieties, of which advantage may be taken.

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buco have formed branches of their commercial establishments. It will appear, however, that the trade of Bahia is rather stationary than retrograding.



## BAHIA, OR BAY OF ALL SAINTS.

[BAHIA DOS TODOS OS SANTOS.]

From the Point Itapuan the coast trends nearly W.S.W., 11 miles, to Cape St. Antonio at the entrance of *Bahia*, or the *Bay of All Saints*. This cape is distinguished by a light-tower, hereafter noticed. At  $2\frac{1}{2}$  miles, East several degrees South, from the light-tower is another point, on which is a lookout and signal station; this point is the southernmost of the promontory of *Bahia*, and it forms, with that called *Itapuanzinho*, at a mile more to the East, a small bay, or cove, occupied by an *armação*, and defended by the rocks. Some habitations are remarkable on the coast about the cape, but landing is difficult. Here the Recife, or border of reefs, terminates.

**BAHIA**, or BAY of ALL SAINTS.—*Bahia de Todos os Santos*, the Bay of All Saints, was discovered in 1503 by Americus Vesputius, under the patronage of the King of Portugal, Don Manoel. Vesputius carried home from the coast of Santa Cruz, as the newly-discovered country was first called by the Portuguese, a cargo of *ibiripitanga*, the dye-wood, which, when cut in pieces, resembled *brazas*, coals of fire: from which circumstance it acquired the name of Brasil wood, and also conferred a name on the country.

In 1510, a vessel under the command of Diogo Alvares Corrêa was wrecked near the entrance of this bay. The Tupinambas, a ferocious tribe inhabiting the coast, fell upon and destroyed all who survived the shipwreck, save the captain of the vessel, Diogo, whom they spared, as some supposed, on account of his activity in assisting them to save articles from the wreck. *Bahia* owes to this event its foundation, and its being long the capital of Brasil.

The entrance of the Bay of All Saints is formed, on the West, by the Island Itaporica, and on the East by the peninsula, on which stands the CITY of St. SALVADOR, or of BAHIA. Within it the land forms an extensive gulf or inland sea, bearing the name of *Reconcavo*, and which receives the waters of several large rivers. The entrance of the bay is seven miles broad, and the gulf within more than 32 leagues in circumference.

The situation of *Bahia* may be instantaneously understood by reference to the chart of the harbour, which exhibits the anchorage, &c. Here fleets, riding on clear ground, may be sheltered from every wind, and surrounded by a country exuberantly rich, in a gulf which seems as if formed by nature for the emporium of the universe.\* The whole of the land which composes the promontory terminating at Cape Antonio appears much higher than that on the opposite side of the bay: it is covered by trees and verdure; and may be seen, in fine weather, at the distance of ten leagues.

On the site of the former lighthouse, the Fort Santo Antonio da Barra, and at about 140 feet above the level of the sea, is a revolving light, showing two brilliant white sides and one red; the latter to be seen once in every four minutes. The lights are visible from the distance of 25 to 30 miles.

*Bahia*, or San Salvador de *Bahia*, stands on the western shore of the *Bahia de Todos os Santos*, which extends twenty-eight miles from South to North, and twenty from East to West. The bay has two entrances on both sides of the island of Itaporica, of which the eastern is about five miles wide, and is used by large vessels; the western, called Barra Falsa, is only two miles wide, and owing to its shallowness can only be navigated by coasting vessels. The best anchorage is opposite the town of *Bahia*. The town consists of two parts, the Praya or Cidade Baxa, and the Cidade Alta, which has the aspect of an old city. The Praya (beach) is one street, nearly four miles long, and contains the magazines and warehouses for inland produce and foreign goods. At its southern extremity are the arsenal and the royal docks, and about three miles north-east of it, at Tagagipe, the ship yards in which mercantile vessels are built. A steep and very difficult ascent leads to the Cidade Alta. Those who can pay are carried up in a cadeira, or ornamented chair, which is supported on the shoulders of negroes. The upper town consists of stone houses from three to five stories high, and of a good appearance. In the centre are several squares surrounded principally by public buildings. The cathedral, the old Jesuits' college, now a hospital, and numerous churches, are the chief public buildings in the upper town. Mr. Kidder is silent as to the number of inhabitants of *Bahia* and other towns in this province. The population has been estimated as exceeding 180,000 souls.

Some of the streets between the upper and lower towns wind by a zig-zag course along ravines; others slant across an almost perpendicular bluff, to avoid, as much as possible,

\* Lindley's Voyage to Brasil.

its steepness. Nor is the surface level, when you have ascended to the summit. Its extent between its extreme limits, Rio Vermelho and Montserate, is about six miles. The town of Bahia is nowhere wide, and for the most part is composed of only one or two principal streets. The direction of these changes with the various curves and angles of the promontory. Frequent openings, between the houses built along the summit, exhibit the most picturesque views of the bay on the one hand, and of the country on the other.

Great sums have been expended in the construction of pavements, but more with a view to preserve the streets from injury by rains, than to furnish roads for any kind of carriages. Here and there may be seen an ancient fountain of stonework, placed in a valley of greater or less depth, to serve as a rendezvous for some stream that trickles down the hill above ; but there is no important aqueduct.

Beyond the city stands the ruined wall of a public cemetery. This cemetery had been laid out and prepared under the auspices of a company, to which had been conceded the privilege of making the interments for the whole city, to their future exclusion from the churches. This was a measure so imperatively called for with respect to health, that it had met with but little opposition at first, and had obtained the sanction of the archbishop. But no sooner was the new cemetery opened for use, than the popular fury broke forth against it. The people assembled in a mob, excited by their priests, whose perquisites were about to be curtailed. When the troops were called out to quell the riot, they joined the mob, and the whole cemetery was defaced and ruined.

The hedges of the suburbs of Bahia are composed of lime trees, the leaves of which, when newly trimmed, emit an exquisite fragrance. Large jaca trees, with their heavy fruit clinging to the limbs and trunk, together with other trees, are abundant here.

Descending towards the Red River, or rivulet, the route is beautifully ornamented by coqueiros, and other indigenous trees and shrubs. Close under the brow of the Antonio hill is the principal establishment connected with the whale fisheries of the harbour.

On the capture of a whale in the bay hundreds of people, the coloured especially, throng around to witness its dying struggles, and to procure portions of the flesh, which they cook and eat. Vast quantities of this fishy food are cooked in the streets, and sold by Quitandeiras. Swine also feast upon the remains. This fishery, at the close of the seventeenth century, was rented to contractors by the crown for 30,000 dollars annually. The American whalers occasionally take whales off this coast, but in general they find other cruising grounds more profitable.

Ascending a winding path from the beach to the Victoria Hill, the English cemetery is beautifully situated.

In the principal parts of the city there is an almost entire absence of horses and mules in the streets, but there is an unlimited number of goats and pigs.

The old cathedral, an immense edifice, which had been constructed with great expense, is now in a very neglected state. One of its wings is appropriated to the public library. It contains about 10,000 volumes, a large portion of which are in French, and some valuable manuscripts. The old Jesuit college, together with the church of Nossa Senhora da Conceição on the Praya, may almost be said to have been built in Europe, from whence the stones, regularly prepared for use, were imported. There are numerous other churches — the president's palace, a substantial building of ancient date.

Among the parochial churches, those of the Concession, Pillar, and St. Peter, are the most distinguished within the city, and those of St. Antonio and Vittoria near the bar, which stand in such striking situations as to form excellent sea-marks.

In the Royal Square is the house, or palace, of the governor, which is an old insignificant building ; and opposite are the mint and public offices. The third side contains the courthouse of the *relação*, and the remaining one the hall of the senate and the prison. The latter is an extensive structure, of which the lower divisions are exceedingly strong and secure.

The customhouse and wharfs are on the beach, as is the dockyard. Near the latter are the marine storehouses and offices, with the house of the intendant, or port commander.

A few of the superior class of inhabitants have large elegant mansions, appropriately fitted up, particularly in the vicinity of the town. The habitations of other opulent individuals are generally roomy and convenient, but shabbily furnished : from the street they have a dull and dirty appearance, which is completely realized within. The houses of tradesmen and shopkeepers are commonly disgustingly dirty ; instead of glazed windows,



they have wooden drop-lattices, which want even the addition of paint to enliven or preserve them. The lowest order of soldiers, mulattoes, and negroes, have tiled cabins, without a ceiling, and with a single latticed window. These, and other buildings, with the exception of a street or two, are all intermingled throughout the city.

The town and shipping are protected by a number of forts and batteries. The first is that on Cape St. Antonio, a small antique fort, surmounted by the light tower. A little bay and sandy beach within are defended by a small fort called *Fort Cabo*, or *Santa Maria*, and the circular battery of *St. Diego*. At the S.W. extremity of the city, that leads to the sea, is *Fort Gamboa*, carrying 18 twenty-four pounders, which range at high water mark. Passing this, the dockyard is defended by the high bulwark battery of *St. Philip*, which mounts about 30 guns. There are three other insignificant batteries on the inhabited part of the beach, and a small one on the projecting point, more to the North, called *Montserrat*. On the land side the city is defended by three forts, &c.

The principal defence, however, is the *Fort do Mar*, which was erected about the year 1600, on a small rocky bank of the inner bay, about one quarter of a mile from the shore. It was first built in a circular form; but, when the Dutch entered the bay, in 1624, they were so greatly annoyed by it, during their attempt to gain possession, that they thought it deserving of additional fortifications, and they completed it to the shape that it bears at present; raising the original tower, and surrounding it with an extensive lower battery. The diameter of the whole is about 270 feet, and that of the upper tower battery 100. The lower battery mounts twenty-nine guns, of which there are a few that are forty-two pounders, and none less than twenty-four; the upper contains only sixteen, consisting of twenty-four and eighteen pounders. The tower ascends from the level of the lower battery about twenty-five feet: it is not a solid mass, but has several apartments, which diverge like rays from the centre to the exterior, and are employed as magazines for powder, artillery stores, &c., and for barracks. The top of the tower is paved with flagstones, carefully cemented and sloped, to preserve the rain that falls on its surface, which, collecting in the centre, descends through a grate into an extensive reservoir below, and affords a sufficiency of water for the garrison for six months, without any other supply.

The house and offices of the commandant, and some rooms for state or military prisoners, are ranged on the lower battery, near the sloping entrance of the fort, on the side fronting the sea. This fort defends the marine arsenal.

The flagstaff of this fort (according to M. Roussin) stands in latitude  $12^{\circ} 58' 23''$ , longitude  $38^{\circ} 30' 37''$ . Variation, in Nov. 1819,  $1^{\circ} 58' W$ . High water, on the full and change, 4 h. 15 m. Spring tides rise 7, neaps only 3 feet. The tides are perfectly regular. At the anchorage before the town the flood and ebb are equal, and their direction is alternately N.N.W. and S.S.E.: their strength, under ordinary circumstances, does not exceed a mile and a half in the hour, but spring tides sometimes run as much as  $2\frac{1}{2}$  miles.

The *FORT DO MAR*, or *SEA FORT*, otherwise called *Fort San Marcello*, repeats the signals of all vessels entering the port, which are first made at *Fort St. Antonio*. They are announced by a gun, with a tri-coloured jack for the three-masted vessels, a red one for brigs, and white for smacks.

Ships, on arrival in the bay, (men of war excepted,) must deliver up all their gunpowder, to be deposited in the *Fort do Mar*, during their continuance in the harbour.

At the imperial dockyard, shipbuilding proceeds very slowly, as it admits only one ship of the line at a time; but at the several yards of Tapagipe, north-eastward of the city, well-modelled merchant ships of all dimensions are built, and with greater despatch.

At about a mile from the city is the suburb of *Vittoria*, where Captain Sabine made his observations, in 1822, and which he states to be in latitude  $12^{\circ} 59' 22''$ , on a sandstone cliff, which descends abruptly about 200 feet to the sea. The great road, by the coast to Pernambuco, and generally toward the northward, passes through the village.

The inhabitants of the city and suburbs are estimated at upwards of 100,000; of whom 30,000 may be whites, 30,000 mulattoes, and the rest negroes.

*The commerce* is very considerable. The imports from Europe are wine, flour, bacalhao, butter, cheese, salt, &c. The exports, cotton, sugar, aqua-ardent, (a species of rum,) coffee, tobacco, lignum-vitæ, mahogany, satin and tulip woods, gums, balsams, and medicinal roots. From Africa, the Bahians receive wax and gold dust, which are obtained in exchange for coarse printed cottons, spirits, and tobacco. The home or coasting trade of Bahia is likewise considerable and extensive; and in that between it and *Rio Grande de St. Pedro*, about forty vessels, of 250 tons each, are engaged. These ships, as they arrive in Bahia,



sell the jerked beef, which they bring, by retail. It is purchased, principally, by the lower class of inhabitants, and for the use of slaves and shipping. This method of disposing of the cargo sometimes detains a vessel several months in the port.

In the immediate confines of the bay, particularly inland, the trade is very great; and it has been said that more than 800 launches and smacks, of different sizes, are thus constantly employed. Tobacco, cotton, and various drugs are brought from the *Cachoeira*; a great assortment of common earthenware from the *Iguaripe*; rum and whale-oil from the island Itaporica; timber from the province of the Ilheos; farinha\* and salt fish from Porto Seguro; cotton and maize from the rivers Real and St. Francisco; and sugar, firewood, and vegetables, from all quarters.

Bahia, as well as Pernambuco, has a staple for cotton; and on the importation of this article, in the launches and smacks, the whole is landed at a warehouse appointed for the purpose, where it is weighed, sorted, and pressed. Its quality, first, second, or inferior, is marked on the bales, and then it is ready for exportation. In this general store it continues till disposed of by the owner, at the prices commonly fixed by the staplers. The aqua-ardent, or spirit, is controlled by an exclusive company, to whom every pipe that does not pass through its warehouses pays a duty, increasing it to the price at which the company sells.

The general mode of conducting commerce has been by barter, notwithstanding the abundance of specie in circulation; and the inhabitants credit each other to a great extent; but, in their dealings, a mean and knavish cunning too frequently prevails, particularly when trading with strangers, of whom they will ask for a commodity double the price they will take; while they endeavour by every artifice to undervalue what they are to have in exchange.

At Bahia are many artificers; including lapidaries, jewellers, gold and silversmiths, &c., who are deficient only in fashion and taste; also tailors, shoemakers, and tanners.

Of meat, mutton, lamb, and veal, are nearly unknown, and never seen in the market. The beef is generally very lean, flabby, and tasteless.

In all the city there is scarcely any accommodation for strangers. As an inn is unknown, those who choose to live on shore must take the whole or part of a house, and furnish it. This, however, is easily done, as a few chairs, trunks, and a table, will be amply sufficient, and in character. Eating houses are distinguished by a tri-coloured flag over the door; but they are inconceivably dirty and disagreeable. The coffee shops, which are numerous, are little better.

The city and country are alike very much infested with beggars; a subject of real or affected distress presenting itself every moment. Assemblages of these mendicants, to the amount of five hundred, may sometimes be seen at once.

The public promenade of Bahia is situated on the boldest and most commanding height of the old town. One of its sides opens towards the ocean, and another up the bay; an iron railing protects the visitor from danger of falling over the steep precipice by which extends its whole front. The space allotted to the battery is laid out in good taste; but the variety and beauty of the trees and flowers of the Passeio Publico render it a delicious promenade.

The Dias de grande gala, or political holidays, are celebrated throughout the empire. These are six in number: first, New Year's day, or that of paying compliments to the emperor and his representatives in the provinces; the second on the 25th of March, the anniversary of the adoption of the constitution; the 7th of April, that of the emperor's accession; the 3rd of May, or that of opening the legislative assembly; the 7th of September, that of the declaration of independence; and the 2nd of December, or the emperor's birthday.

Bands of music frequently pass in large launches, playing in their way to the neighbouring villages on the bay, to commemorate the anniversary of some saint, or other festivity. It has, also, been a custom with the Portuguese European ships to have music on arrival, at departure, and the first day of taking in cargo; which sounds charmingly from the water. The musicians are all black, and are trained by the barber-surgeons of the city, who are of the same colour, and have been itinerant musicians from time immemorial.

\* Farinha is the Cassava flour, prepared from the root of the shrub mandioc. It is the bread of South America.

Iaguape, Amoro Jacobina, Do Sitio, and San Francisco, are all bustling towns of the province. The country, in general, is cultivated inland to a considerable distance, and is divided into very extensive plantations, many having 200 or 300 slaves, with horses in proportion, to work the *engenios*, or sugar estates, except in those situated where water is introduced to set the mills in motion. The owners of these plantations have very handsome seats, with chapels adjoining, where they generally reside, except during the winter rains, when they repair, with their families, to their houses in the city.

REMARKS from M. ROUSSIN, 1819.—Ships will find at Bahia the means of providing for all their wants : they may careen, re-mast, and repair all sorts of damage ; but the workmanship is very dear, and the port dues extravagantly high, as in the other large ports of Brasil.\*

In the fine season all kinds of repairs may be made at the anchorage West of the town ; during the other part of the year it will be more prudent to make them at Tapagipe, in a little bay situate to the eastward of the peninsula of Montserrat, where the water is smooth as in a basin.

There are good watering places at many points of the interior coast of Bahia : water is easily obtained, either near the *Fort Gamboa*, (South of the town,) under the public garden, or at some distance to the northward of the marine arsenal ; but when a number of ships cause a great concourse of boats, it will be better to go to Tapagipe for water, if required in a great quantity.

Wood for fuel is abundant : and, in 1819, pit coal was obtainable, it having then been introduced into the country. Provisions and refreshments for shipping were easily obtained, nearly at the same prices as at Rio Janeiro ; namely, cattle, farinha, and flour of wheat, rum, poultry, hogs, dried fish, tropical fruits, and vegetables.

An intelligent voyager, who visited Bahia in April, 1824, describes it as follows :

I went on shore in the evening, and called, as is the etiquette, upon the British consul, who lives at *Vittoria*, in the Upper or New Town. This is almost an English settlement, and delightfully situated, with lanes, at least clean, if not trim, and gardens, or rather shrubberies, to each house, down to the sea. The mango, and other tropical trees, struck me with their rich leafiness, after the barrenness and dryness of Australian foliage. I found the white cedar, the *melia azedarach*, or common bead-tree of India, growing here, as well as at New South Wales ; and I particularly admired the splendour of that species of acacia, called *poinciana pulcherrima*, or the Barbadoes flower-fence.

The Lower Town of Bahia, in which the English merchants have counting houses only, is very close and disgusting, rather from filth and the manners of the Portuguese, than from the mode of building ; for narrow streets insure shade, and declivity of ground commands the sea breeze everywhere by its nature, and would command cleanliness with very little art. There are many British merchants and shopkeepers settled here, corresponding principally with Liverpool. They are, as they are all over the world, the wealthiest and most respectable people in the place, and in favour with all parties, royalists, imperialists, and republicans.

The next afternoon I went on shore till my ship should sail, to enjoy the hospitality of my countrymen at Vittoria. I had no other claim to it than that of common country, but that was enough.

The weather favoured our little *relache*, and our ship completed her watering on the 23rd of April. I had, therefore, no time to visit the interior of the country, to which, indeed, there are no roads ; but I perambulated the city of Bahia with great diligence, both in *caderas* and on horseback. The streets are too steep for carriages, although the hill, on which the town is built, is not 600 feet high, (as the books say,) but a little more than 200. The *caderas*, or curtained chairs, which are used as much by gentlemen as by ladies, are carried obliquely, with only one pole from the top of the chair on the shoulder of each of two negroes ; so that each may see his way before him, and the sitter enjoy the thorough breeze, and see before him too, if he chooses to open the curtains.

\* In the month of March, 1833, the brig *Arethusa*, Captain J. S. Boulton, on her return from Van Diemen's Land, was constrained, from want of water, to put into Bahia : and the captain says, On Saturday, the 16th of March, by our time, (Friday, the 15th, by that of the country,) we anchored in Bahia Roads ; and, after quarantine till the evening, found the charges for anchorage, and schemes for detention, in order to augment those charges, truly disgraceful. In short, the expense of gaining twelve casks of water was £20 sterling. See the account of the route of the *Arethusa* in the *Nautical Magazine*, August, 1833.

As it was the season of the carnival, and this city was once the ecclesiastical metropolis of Brasil, we expected to witness the masquerading holidays of the Roman Catholic religion. But the revolution had left priests at a heavy discount. We found the saint cupboards in the streets shut up, and the carnival was forbidden by the governor from fear of political riot.

On Sunday, the 25th, I visited the public garden in the fort of St. Peter, presenting a fine terrace to the sea. In the afternoon I re-embarked, with oranges and limes, though they kept not long, and pleased with Bahia, although I did not find it so musical and romantic as Rio Janeiro.

The climate of Bahia is not oppressive to a visitor; but it must be tiresome to a resident to have the thermometer all the year round from  $75^{\circ}$  to  $85^{\circ}$ . Winter rains induce the lower degree, and the higher is always relieved by a sea-breeze.

The oranges of Bahia are particularly fine. They are seedless in the main core. The seeds are in a little perfect sub-orange at the top of the other, which gives the fruit somewhat of a pear shape, with the seed-chamber divisions indicated in the rind of this little top orange. The ant is a great enemy of this fruit tree. Its armies will strip an orange tree in a night. They surmount all difficulties. Fire at night is the only remedy.

The only manufactory at Bahia is of red pottery. The various water vessels are peculiarly adapted to this warm climate.

**SAILING DIRECTIONS for BAHIA.**—Cape St. Antonio, at the entrance, is placed by the Baron Roussin in  $13^{\circ} 0' 44''$  S., and  $38^{\circ} 31' 28''$  W. Captain Sabine, in 1832, gave the longitude as  $38^{\circ} 33\frac{1}{2}'$ , but other authorities have given it more to the eastward, and the mean appears to be  $38^{\circ} 32\frac{1}{2}'$  W.

Of the principal entrance to Bahia the narrowest part is  $4\frac{1}{2}$  miles broad, but only one half of that space (on the eastern side) is navigable for large vessels, owing to ledges of rocks and uneven ground extending from the East and S.E. sides of Itaporica, and which should not be approached to less than 8 or 9 fathoms.

On the eastern side, without this entrance, is the *Bank of St. Antonio*, the outer extremity of which is  $4\frac{1}{2}$  miles S.  $\frac{1}{2}$  E. from the cape of St. Antonio. This bank is composed of red sand, mixed with coral. It is of an irregular shape, but is narrow in proportion to its breadth, and it extends nearly North and South. The least depth on it is about 13 feet at low water. As the sea sometimes breaks over some parts of it in strong winds, it is always best to pass outside of the above distance in a large ship. The depth of 7 fathoms limits this bank on the South in the parallel of  $13^{\circ} 5\frac{1}{2}'$ .

Between this bank and the shore is a channel having a depth of 10 fathoms, with muddy bottom, and frequently used;\* but it is to be observed that, in going in, the wind almost always allows a vessel to fetch the anchorage before the town by one board, on passing to the southward of the bank. At one or two miles to the eastward of the southern point of the bank the depth is regular, from 35 to 20 fathoms, and which may be carried close to it.

The bottom, in the vicinity of the bank, is a mixture of sand, coral, and coarse gravel. Mud is found in the N.E. only, on approaching the land. At three leagues from the coast, with Cape Antonio bearing North to N.N.W., the depth is not more than 40 fathoms; and a little farther off, in the same direction, no soundings have yet been obtained.

At the ENTRANCE of the HARBOUR the depths are from 14 to 16 fathoms, within half a mile of the eastern shore, whence it deepens to 18 or 20 fathoms, westward, until about two-thirds across, farther than which heavy ships ought not to stand. To the westward of this are overfalls, shoaling from 14 to  $6\frac{1}{2}$  fathoms, then deepening again to 12; and, in some places, at  $2\frac{1}{2}$  miles from Itaporica, there are no more than three fathoms.

On the eastern point of Itaporica the reefs extend about a mile from shore; and, at about a cable's length without them, the depth is 6 fathoms; it thence increases quickly to 12, 18, 24, and 26 fathoms, soft muddy bottom, and in the midway over is more water: from this, in an easterly direction, the depth gradually decreases to 12 fathoms, at a mile or a mile and a half from Fort do Mar.

The *Panella Reef* is a spot of very foul ground, about half a mile in length, from the

\* This is a good channel with a commanding breeze. It has been tried by several British frigates, and recommended as a short and safe passage into Bahia. Its breadth is three quarters of a mile, and least depth, on either side, 6 and 7 fathoms.



centre of which the Fort do Mar bears E.S.E.  $\frac{3}{4}$  E. three quarters of a mile. It has, on some parts, only  $3\frac{1}{2}$  fathoms, at three-quarters ebb; on the other parts are 10 fathoms, rocky bottom. H.M.S. *Nereus* moored upon it in 7 fathoms, (being then unacquainted,) with Fort do Mar bearing East, Fort Cabo S.  $5^{\circ}$  W., and Montserrat Fort N.  $15^{\circ}$  E., and had her cables much injured.

There is good anchorage around this shoal: between it and Fort do Mar in 7 or 8 fathoms; without it in 12 or 14 fathoms; above it 8 or 9 fathoms; and below it, in the same depth, on good ground. Small vessels generally lie between the city and Fort do Mar.

The best anchorage for ships of war is in 10 or 12 fathoms, with Fort do Mar bearing N.  $73^{\circ}$  E., and Montserrat Fort N.  $28^{\circ}$  W., at about a mile and a half from the city. From this spot they will be able to get clear out, with the very light morning winds, as the ebb tide sets strongly toward Forts Cabo and St. Antonio.

The watering place is at a short distance from the South end of the town, between it and Fort Gamboa: off the latter, a shoal extends alongshore, and one third of a mile outward. On this shoal H.M. sloop *Bonne Citoyenne* grounded in 1812: it has only 10 feet over it at three cables' length from shore, hard, sandy bottom. The bastions of Fort Cabo kept just open of the slope of the hill, on which stands a convent with a double spire (nearly S. by W.), will lead across the edge of the shoal in five fathoms.

A red buoy has been placed on this sandbank, which extends from Fort Gamboa, or St. Maratho, to opposite the obelisk, at the public garden. On entering, this buoy must be passed on the right; it is placed with a depth of  $2\frac{1}{4}$  fathoms at low water. The necessity of placing a buoy on this bank is shown by many ships having touched on the same lately.

Captain Horsburgh has said, that "This port is sometimes visited by outward-bound East India ships in want of refreshments; but its situation being in the middle of the S.E. trade, navigators are cautious of touching here, thinking [that] they may find it difficult to get to the South afterward, on account of adverse winds, said (in some old books) to blow along the coast from the southward from March to September; but the East India ships have never found any difficulty in getting from this port to the southward, even in the most unfavourable months, June, July, and August; for the wind generally draws well to the eastward here, and more so as you proceed to the southward.\*"

SHIPS DESTINED TO BAHIA, DURING THE SOUTHERLY MONSOON, should steer for the Morro of San Paulo, in latitude  $13^{\circ} 21' 53''$ , and longitude  $38^{\circ} 54'$ . Although this morro is not of great height, it is sufficiently remarkable by being backed and followed to the northward by land lower than itself, and by having on its northern extremity five or six cocoanut trees, divided (in 1819) into two groups, and very distinct in comparison with the surrounding land. The hummock, which terminates this morro to the North, when seen from a short distance, presents on the side next to the sea large white spots, which form a striking contrast with the surrounding verdure, and which may, in clear weather, be seen at the distance of eight leagues.

To the northward of the Morro of San Paulo the coast is low, sandy, and bordered with reefs: it forms a bay, and then, extending to the N.E., appears as if connected with the high land of Itaporica, on the West side of the entrance of Bahia.

The separation between the western side of Itaporica and the continent forms what is called the False Entrance of Bahia. It is very narrow, tortuous, shallow, and cannot readily be distinguished. It admits very small vessels only; for even the coasters do not use it unless when trading there, or when the wind will not permit them to use the principal entrance.

From the Morro of San Paulo to Cape St. Antonio the distance is ten leagues, and the direction N.E. In fine weather the two points are visible from each other. From near the Morro a ship may safely steer N.E.: a depth of 30 to 11 fathoms will be found on a bottom of mud, sand, gravel, and coral; and this course will lead at a convenient distance between the edge of the banks to the southward of Itaporica and that of St. Antonio. A large vessel should not go to the N.W. of this line, while to the southward of Itaporica; and, if the wind blow strongly on the coast, she should keep outside until certain of being on the meridian of the point Jabaru, the East point of that island, which will be known by the depth being above 11 fathoms.

If necessary to work to windward, it will be advisable to go no nearer than 5 miles to the

\* Compare with this the description of winds on pages 1 to 5.

coast of the continent, when to the southward of Itaporica, and to keep at the same distance from the island until Point Jabaru bears North. With this point bearing North, and at 7 miles from it, Cape St. Antonio will bear N.  $41^{\circ}$  E. true, distant 5 miles, and the South extremity of the bank, off the cape, about a league to the eastward, and from thence a course may be shaped for the cape until within half a mile of its shore, and then another direct for the church of *Bom Fim*, on Montserrat, until abreast the Fort do Mar, near which is the ordinary anchorage.

SHIPS BOUND TO BAHIA DURING THE NORTHERLY MONSOONS should endeavour to make the land at some leagues to the northward of the Point Itapuan, which has been described, (page 125.) During the southerly monsoon they steer for the Morro of San Paulo, as described above.

The only precaution necessary to be taken by ships from the northward, in order to avoid the Bank of St. Antonio, is to give a berth of 5 miles to the cape, in rounding\* it, until it bears N. by E.  $\frac{1}{2}$  E., when they may steer for the church of Bom Fim (on the peninsula of Montserrat) until abreast of the Fort do Mar, or of San Marcello, near which is the ordinary anchorage. The depths in this course vary from  $10\frac{1}{2}$  fathoms, at a mile West of the Bank of St. Antonio, to 18 fathoms, at the same distance from the fort of that name. Afterward, closing the shore, the depths will diminish gradually to 9 or 8 fathoms, near the Fort do Mar. If, in making this route, the wind should prove contrary, some boards may be made, of 2 or 3 miles, between the bearing which connects Cape St. Antonio and the church of Bom Fim and the banks on the S.E. coast of Itaporica; but it will be necessary to keep the lead going on both tacks, and not to go into less than 7 fathoms.

The ordinary anchorage of ships of war is between West and S.W. of Fort do Mar, at the distance of from two to ten cables' length from that fort. From the anchorage, in 9 fathoms, the Point Maguinha of Itaporica bears N.  $51^{\circ}$  W., Fort St. Antonio S.  $21^{\circ}$  W., and the Point Montserrat or Monserat N.  $12^{\circ}$  E.

The great number of cables lost here renders it necessary to round the cables, and examine them frequently.

The anchorage for merchant ships is within the line that connects Fort do Mar and the Point Montserrat. On going in, the Panella Reef must be avoided. The pilots place this shoal at 160 fathoms W. by N. from Point do Mar, and on it, they say, there is not to be found more than  $3\frac{1}{2}$  fathoms at low water.

The best place within the anchorage for ships of war is opposite the obelisk of the public garden. Ships moor in a N.N.E. and S.S.W. direction, being that of the flood and ebb tides.

The prevailing wind is from East and S.E., with which ships may get in on one board. During the night the wind is from various points of the compass, and principally from the land side. The winds from South to North, by the East, which prevail most frequently, are always weakened by the heights under which vessels anchor, and the land winds seldom have any strength. In the southerly monsoons only, and principally in the months of July, August, and September, the winds veering sometimes to S.W. blow home into the bay, and cause a great swell, which is very inconvenient, particularly at the change of tides: but these circumstances are of short duration; they occur generally at the times of new and full moons, and do not last beyond three or four successive days.

THE ROUTE FOR GOING OUT is the same as that for coming in, on the reversed direction. A vessel must run along the coast at the distance of half a mile to a mile, until she is abreast and to the westward of the lighthouse of Cape St. Antonio. In this track, from the Fort do Mar, from 8 to 18 fathoms will be found; and if farther off, a greater depth, even to 25 and 27 fathoms. Having arrived at one mile West of Cape St. Antonio, and steering S.S.W. 5 miles, the shoal of the cape will be passed in a good depth; after which a course may be shaped for the eastward.

### III.—BAHIA TO PORTO SEGURO AND THE ABROLHOS.

THE ISLAND ITAPORICA, opposite to St. Salvador, is enriched by numerous villages, delightfully situated. Its chief town is near the North end, defended by a strong fort, and has a brisk trade; it being the general mart of the island, and the rendezvous of all the launches passing through the inlets and creeks of this part of the bay. There are

distilleries here, two churches, and an establishment for preparing oil from whales, which are frequently taken off the coast. Of the latter, many, at times, are seen, but few only are killed, in large boats, from the shore, to which the prizes are conveyed for boiling; but as the oil thus produced is by no means equal to the consumption, it is consequently dear.\*

The island of Itaporica is about 18 miles long, and 5 wide on an average. It has a population estimated at 16,000 souls, of whom 7,000 were said to live in its town. San Amaro, situated on a river which falls into the northern extremity of the bay, in a country abounding in sugar and tobacco, was estimated to contain 10,000 inhabitants. Caxoeira, on the river Paraguassu, is built at the point to which the tide ascends, and near some cataracts which interrupt the ascent of the river. In its neighbourhood there are plantations of sugar and tobacco; it contains 25,000 inhabitants. Camamu is a seaport South of the Bahia, and with an estimated population of 8,000 inhabitants; exports to the capital mandioc, rice, maize, coffee, and the bark of the mango tree, which is used in tanning. A row of small islands and rocks skirt the shores North of the Bahia de Camamu, and form a channel by which small vessels can proceed to the Barra Falsa, without being exposed to the dangers of an open sea.

The channel between Itaporica and the main is navigated by small vessels, as we have already noticed, and a passage into All Saints Bay may thus be made by the coasters, when the wind does not admit a direct passage to St. Salvador from the southward.

POSITIONS OF THE PRINCIPAL POINTS, ETC.

	Latitude S.	Longitude W.
Morro of St. Amaro, in Itaporica . . . . .	13° 1° 8"	38° 44' 15"
Knoll of Conceição . . . . .	13 2 33	38 40 8
Point Jaburu, in Itaporica . . . . .	12 57 36	38 34 40
Nossa Senhora da Penha . . . . .	12 59 16	38 35 14
Point Aratuba . . . . .	13 5 7	38 41 9
Point Caixo-Pregos . . . . .	13 7 33	38 44 20
Morro of San Paulo . . . . .	13 21 53	38 52 30
Hill W.N.W. from the same . . . . .	13 19 27	38 56 0
Isle Boypedá; one of the summits . . . . .	13 37 43	38 53 35
Isle Quiepé . . . . .	13 50 58	35 55 0
Villa de Contas . . . . .	14 18 6	38 56 32
Os Ilheos; the largest rock . . . . .	14 47 23	38 55 0
Town of San Jorge dos Ilheos . . . . .	14 49 25	38 56 15
Village of Unha . . . . .	14 59 7	38 53 30
Morro of Commandatuba; the S.E. summit . . . . .	15 22 8	39 3 33
Village of Commandatuba . . . . .	15 25 20	38 52 22
Town of Belmonte . . . . .	15 51 4	38 50 13
Santa Cruz; the steeple . . . . .	16 18 50	38 58 0
Porto Seguro; steeple of the Cathedral . . . . .	16 26 50	38 59 18
Nossa Senhora da Judea; Chapel . . . . .	16 29 25	39 0 34
Monte Pascoal, or Mount Pascal; the summit . . . . .	16 54 8	39 23 25
Mount João de Liam; the summit . . . . .	17 0 26	39 34 40
Mouth of the Rio Cramimuan . . . . .	16 51 12	39 10 30
Colombiana . . . . .	17 6 1	39 7 50
Villa Prado; flagstaff on the Fort . . . . .	17 21 28	39 7 30
Paracel dos Paredes; N.E. point . . . . .	17 56 45	38 47 30
ABROLHOS ISLES; North-easternmost Rock . . . . .	17 57 27	38 35 50
————— Largest Isle, eastern summit	17 57 44	38 35 54

The MORRO DE ST. PAULO, in the parallel of 13° 22', appears, at a great distance, like a high bluff rugged hill; but, on approaching, is found to be covered with beautiful verdure, and on its extreme point stands a neglected fortification. Passing this, the land forms a small deep bay, the water of which is transparent, and as placid as a mill-pond.

\* Lindley's Narrative, page 141.



The coast of the island of St. Paul is bold; the town of this island is the capital of the presidio of St. Paul, but it is a miserable one, though delightfully situated. Here, also, are a fort and garrison.

**RIO UNA.**—On the N.W. of the Morro of St. Paulo the mouth of the river *Una* is nearly three miles broad, and forms a convenient harbour. Its western shore is low and sandy, and bordered by a sandbank, more than a mile broad on the outer part, but diminishing inward to a point, to  $2\frac{1}{2}$  miles W.N.W. from the Morro, where the river is about nine-tenths of a mile broad. On this line of direction the soundings, with clean and good ground, vary from  $4\frac{1}{2}$  to 5, 6, 7, 8, and 9 fathoms; with secure anchorage, sheltered by the high lands to the eastward, the Morro bearing about E. by N. a mile distant. The landing-place is half a mile within the Morro, on a small bay, within which is a village, protected by batteries, and having a red projecting cliff on the West. (High water at 3 h. p.m., rise, 6 feet.)—*Capt. Chas. Eden, 1835.*

Without the Morro, on the S.E., is a low islet, *Tinharé*, 3 cables long from W. to E., and surrounded by foul ground, with breakers extending from it on the N.E. at 7 cables from the fort on the Morro Point.

The coast of *Boypedá Island*, southward of St. Paul's, is rocky and dangerous; particularly in the southern part called the *Morrera Reef*. At three leagues from the latter are other dangerous reefs, which extend far out from *Ponta dos Castelhanos*. From the wrecks which have occurred, Mr. Lindley advises that vessels passing should not approach the coast hereabout within half a degree.

**RIO CAMAMU.**—Point *Castelhanos* is the North point of an elevated coast, whence it inclines to a low point, *Ponta da Muta*, off which lies, in the same northerly direction, the little isle *Quiépé*, surrounded by rocks. This isle, with the adjacent coast, form between them a small basin, into which falls the river *Acarahy*, distinguished by the little town of *Camamu*. Breakers impede an entrance into this bay, and prevent the access of all but small vessels.

The land of the *Camamu*, to the southward of *Castelhanos Point*, is covered with mangroves. Its termination may be known by a white rock (*Pedra Branca*) upon the South side of the *Rio das Contas*, a river accessible only by boats, in latitude  $14^{\circ} 18'$ .

The mouth of the *Contas* may be seen from the offing. Its South point is high and covered with trees; and, on nearing the coast, a small town will be seen.

From the *Contas* the coast trends S.  $\frac{1}{4}$  W. ten leagues. All along it is perfectly clean, and large ships may proceed along it at the distance of two miles. The line of coast is broken off by several small creeks or mouths of rivulets.

**St. GEORGE DOS ILHEOS.**—The Fort of St. George dos Ilheos is situate on the South side of the bay of the same name, and appears like a part of the little town which is the capital of the province. Two remarkable islets lie off the mouth of the river, at a short distance to the East, and form with the coast a shelter for the coasters. A range of reefs extends to the southward, athwart the mouth of the river. Hence vessels proceeding to the latter must round the northernmost islet, (*Isla Verde*), off the western side of which they may anchor in 8 fathoms. The isles at a distance appear in the shape of cardinals' hats; one is covered with trees, and the other is bare, and frequently covered with breakers. The *Rio Ilheos* is large, but divided inland into many small branches. The town of St. George, immediately on entering the river, may be seen on the North side. On the bar is little more than 2 fathoms. The North point of the entrance is a high land, called *Ponta de Caõ*, or *Dog's Nose*, at the base of which are some rocks, over which the sea runs in breakers.

The latitude of the *Ilha Verde* is  $14^{\circ} 47' 23''$ . At three miles to the East of it the depth is of 18 fathoms, bottom of oaze.

**BELMONTE.**—At the distance of 21 leagues S.  $4^{\circ}$  E. from the fort of St. George dos Ilheos is the mouth of a river, the *Rio Grande de Porto Seguro*, the entrance to which may be known by the town of *BELMONTE*, a new and thriving settlement. This town commences on the South point of the river, and is masked by heavy breakers on shore to the right and left. The river is said to be one of the second order of the interior of Brasil, but has not more than two fathoms over the bar at high water. The province of *Porto Seguro* is bounded on the North by this river, which divides it from that of the *Ilheos*, or *Isles*.

The coast to the northward of *Belmonte* is straight, bold to, and uniformly woody, and

may be approached with safety.\* At from one to five miles from shore are found from 7 to 20 fathoms of water, over a bottom where oaze and broken madrepores predominate. At about 10 leagues to the North of Belmonte are the southern boundaries of the *Serras de Itaraca*, a group of mountains terminating the low lands which follow *Mount Pascoal*, or *Pascal*, to the North. The southernmost of this group are the *Morros de Commandatuba*, where there is a small river of the same name, in latitude  $15^{\circ} 19'$ . Beyond the parallel of these mountains the shore, variegated by hills, covered with trees, and small cultivated valleys, presents a very pleasing aspect, onward or northward to *Bahia*, or the Bay of All Saints.

**PORTO SEGURO, &c.**—From Belmonte, or the mouth of the Rio Grande, to *Porto Seguro* (latitude  $16^{\circ} 26' 50''$ ) the coast trends S.  $15^{\circ}$  W. 38 miles. It is covered with trees, which seem to lower gradually on advancing from the South to the North; and it is bordered, nearly to the distance of three miles off, with sandbanks and shoals, several of which are uncovered at low water, and dangerous to approach without a pilot. The banks are separated by the openings before *Santú Cruz*, *Coroã Vermelha*, adjoining, and *St. Antonio*, small establishments on the coast, accessible to small vessels of the country only, and unimportant to vessels of burthen.

The HARBOUR named PORTO SEGURO is formed by a reef or ledge of rocks, that extend from a point of the main about a mile out, in a direction parallel with the land, forming a natural mole. These rocks are dry at low water, and terminate abruptly, appearing again faintly at the distance of half a mile; the space between is the entrance or bar of the harbour, over which there is a depth of 20 feet with high tides, but the depth within shoalens to 12 feet. The last may be considered as the average depth of the port. The bottom is of fine sand, gradually ascending to a broad beach.

On entering, the view of the country is delightful. Near the water's edge is a range of fishermen's cottages, shaded with waving cocoa in front, and each having its adjoining orange ground. At the back of these cots the native underwood intrudes, and, intersected into numberless paths, forms evergreen groves, full of birds of rich plumage, and some of song. To the northward the land rises to a steep hill, which is ascended by a winding path, leading to the town, which stands upon its summit.

Of the town, the streets are sufficiently broad, straight, but irregularly disposed. The houses are generally of one story, low and ill-built, of soft clay bricks, cemented with the same, and plastered over. They are wholly destitute of glazed windows, having only lattices of split cane, and appear dirty and wretched. About half a dozen are of two stories; the largest of which is a quadrangular town-house and a prison, the house of the civil governor, &c. The churches, of which there are two, have glazed windows, and are, as usual in Brasil, the best buildings in the place.

On the banks of the river, below the town, stands a village of the same extent, containing about 400 cabins or cottages, and 3,000 inhabitants, including slaves and Indians. These people are employed solely in the fishery about the isles and rocks called the *Abrolhos*. Fifty decked launches, or thereabout, are employed in this fishery, which keep the sea for a month or six weeks, until their cargoes are completed. The principal fish is a large one, of the salmon species, which is salted for the *Bahia* market.

Those who remain in town, and are not fishers, are employed in careening the launches, and making nets and lines. The latter are the best in the world; being composed of cotton well twisted, and then rubbed several times with the inner bark of a tree, which contains a glutinous resin that immediately hardens in the sun, and is proof against the effect of salt water. These lines are thus peculiarly strong, and yet elastic. Of the launches and cargoes the property is confined to a few individuals, who are comparatively rich; receiving returns for their fish in cash and necessities of food and clothing, which are sold again to such of their poorer dependents as can purchase, for the generality are unable. Happily for the latter they live in a fine climate, wherein no extremes of heat or cold distress the human frame, and where they can exist almost without clothing. Although fresh fish may be obtained in great quantities on the coast, the people are too indolent to procure them, and this article is dear and scarce. The common food is salt fish and farinha, (the latter is about 3s. 6d. per bushel,) with oranges, bananas, and cocoas, which fruits are in such abundance that they bear no price. English vegetables are here exotics; potatoes

\* The country hereabout is covered with extensive forests, and the trees are considered as the best for ship building in Brasil. Hence, therefore, the government yards are chiefly supplied.

and cabbages are scarcely known, onions are imported from Europe or Bahia. Of beef only one beast is killed in a week, and that on Sunday; the prime quarters are then taken for the governor and officers of the town, and the remainder sold to the people.

The principal inhabitants have each a country farm, mostly situated on the banks of the river, to the distance of five leagues from the entrance, and extending to a village named Villa Verde. At these are plantations of sugar, with mandioc for farinha. Poultry and domestic cattle are plentiful, yet the general diet is much the same as that in town, and milk is totally unused. With cultivation and industry all the blessings of nature would abound here; while from misrule on the part of government, and indolence on that of individuals, the greater part of the people exist in want, poverty, and ignorance of the best enjoyments of human life. The climate cannot be admitted as an excuse for want of exertion, for many weeks are as moderate as an European September, and the winter months are generally so; even during the hot days there are intervals of cool breezes, besides some hours of every evening and morning, during which the sun's rays have but little force, and the ground is cool from the excessive dews which fall here.

The inhabitants plume themselves on the circumstance of theirs being the spot where Brasil was first discovered by Cabral, in March, 1500; and they preserve, with great veneration, the holy cross that was erected under a spreading tree at the first high mass, with music, discharge of ordnance, &c.

The Baron Roussin says that the small river which falls into the port has, according to the pilots, only 18 feet over the bar at high water, and within are 11 feet; so that it cannot receive large vessels. Several banks, besides, extend to the offing, and it is dangerous to approach within two leagues without a pilot. At this distance are ten fathoms of water.

It is stated above that the town of Porto Seguro stands on the North side of the harbour. The land is scarped or steep, and the ascent to it is by a winding road, remarkable by its reddish colour, by which it may be known on advancing from the offing.

The fertility of the adjacent country offers many resources to vessels which may visit the port, and which may easily obtain water, wood, cattle, and all the ordinary refreshments of a tropical climate.

At the distance of two miles to the southward of Porto Seguro is the chapel of *Nossa Senhora da Judea*. It is very elevated, and its white walls, in contrast with the trees beyond it, form an excellent seamark. Its patroness, the *Madonna*, is particularly invoked by the neighbouring coasters, in cases of distress or contrary winds.

To the southward of Porto Seguro, beyond the chapel of *Nossa Senhora da Judea*, is a small shallow bay, called that of *Trancoso*. Here are several plantations, and the country appears delightful. Farther southward, as shown on the chart, is the *Rio dos Frados* (River of the Fathers). The mouth of this is completely choked by a bar, and there is not a single plantation on its banks.

MONTE PASCOAL, or *Mount Pascal*, in about  $16^{\circ} 54' S.$  and  $39^{\circ} 23' W.$ , rears its circular white head, and is conspicuous to a great distance, serving as a pilot mark in the dangerous navigation to the Rio Caravelhas; for all along the coast hereabout is an assemblage of reefs, sunken rocks, and shallows; yet the neighbouring pilots conduct vessels so skilfully through, that few accidents are known.

From the *Rio dos Frados*, southward, to the *Villa Prado*, situate at the entrance of the Rio Jucuruçu, is a long range of neglected coast, intersected by several small rivers, and frequented by such numbers of hostile Indians, that travelling on the beach is exceedingly dangerous, and never attempted without a guard. PRADO (lat.  $17^{\circ} 22'$ ) is a thriving fishing town, but it is exceeded by Alcobaça, which stands more to the southward. The people of the neighbourhood employ themselves exclusively in the culture of farinha, with which they supply the port of Caravelhas.

CARAVELHAS, or CARAVELLOS, in the parallel of  $17^{\circ} 42' S.$ , is the principal mart for farinha on this coast, and the place from which Rio Janeiro, Bahia, and Pernambuco are chiefly supplied. A considerable number of smacks, barks, and launches, belong to this port; which are built here, not only for its own use, but also for that of Porto Seguro. The river has, however, a dangerous bar, that will admit vessels of twelve feet only; but within the bar there is a depth of ten fathoms. The river is two miles broad, and proportionably deep, and for six miles that it ascends to the town (St. Antonio) its banks are beautifully interspersed with plantations. The town is bustling and populous; the buildings are somewhat superior to those of Porto Seguro, though in the same style; but the



church has a miserable appearance. The country around is well cultivated with plantations of mandioc, from which farinha is extracted.

The Mount Pascal is the first remarkable mountain which is presented to view from sea on approaching from the southward; it makes part of a group of hills, extending nearly in a S.E. and N.W. direction, whereof the southernmost presents, at its northern extremity, a piton in form of a large square tower, which cannot be mistaken.

When seen from the East, Mount Pascal appears conical; at five leagues from shore it may be easily recognized from its elevation, and the heights surrounding it, which may be seen afar off.

The ITACOLMI, an irregular assemblage of rocks and sandy banks, of which several are uncovered at low water, extend in a North and South direction, 11 miles, at a distance of five to ten miles from the coast.\* Their extent is from E.S.E. of Mount Pascal up to its parallel. You may navigate and anchor between them and the land from the southern extremity to one half of their length; but the northern part is connected to the shore by a bar or bank of sand, which it is said leaves no passage. By keeping to the distance of 13 miles from the coast you will avoid all danger, and have from 10 to 20 fathoms of water. At 16 miles more to the East there are 80 fathoms.

As you advance to the land, North of the parallel of Mount Pascal, you may approach it to the distance of three miles, where the depths are from 10 to 22 fathoms, on a great part of the coast northward.

*In proportion as you approach Porto Seguro*, on coming from the South, the cliffs appear more red, and the woods with which they are crowned have an admixture of cocoa trees, a sort of tree seldom seen more to the South. In proceeding along you pass successively before the entrances (hardly visible at four miles off) of the Cramimuan, Joasima, Frados, the little bay of Trancoso, and the chapel of N. S. da Judea, described above, as an excellent mark for the port.

PRADO.—The coast from the parallel of Mount Pascal to the *Villa Prado* trends S.  $\frac{3}{4}$  W. It is low, woody, and uniform, as it likewise continues more to the South; but it is distinguished by its low cliffs of tufa or sandstone, of a reddish colour, which form the shore; a few heights in the interior of the country may be seen, less elevated, however, than Mount Pascal, and still less toward the sea.

Prado, on the parallel of  $17^{\circ} 22' S.$ , stands, as above noticed, at the entrance of the little river Jucuruçu, which forms an opening very apparent among the trees with which the coast is covered. You may approach this embouchure to the distance of three miles, and have from 9 to 13 fathoms of water, bottom of sand and oaze; and this depth continues, along shore, as far as a league to the North of the small hamlet *Colombiana*, situate on the shore, E.S.E. from Mount Pascal.

The **ABROLHOS**,† or ISLETS of SANTA BARBARA, at twelve leagues from the coast, in latitude  $17^{\circ} 58'$ , and longitude about  $38^{\circ} 36'$ , are four in number, exclusive of several patches of rock, of which the largest is at 150 fathoms to the North of the largest and easternmost islet.

These islets form between them a trapezium, of about 3,000 fathoms in extent. The two northernmost are the highest; that to the West being 130, and the other 150 feet high. The group may be seen from the topmasthead of a frigate, at the distance of 22 miles, if the weather be clear.

The islets are formed of a sort of whitish rock, which decomposes in the air, but hardens in the sea. It is of the same nature with that which constitutes almost all the other islets and rocks on the Brazilian coast. The Abrolhos, therefore, are perfectly sterile, with the exception of rushes, some cactus, wild purslain, and a cluster of small shrubs, whereof the existence is singular in the middle of this mass of rocks.

Innumerable seabirds cover the islets with their nests and eggs, but none of these birds are fit to eat. Turtle at times have been found, but not so frequently as the solitude of the place would lead us to suppose. Sea salt, perfectly crystallized, is found in several places, and a small quantity of fresh water filters down to the base at the North point of the northern islet.

In July, 1819, few fish were to be found at the Abrolhos. This was, however, attributed

\* *Itacolomi* is a generic Brazilian name given to many rocks which appear above water, and to round hummocks on the coast.

† "Open your eyes."—*Portuguese*.

to its being an unfavourable season ; for it is in the vicinity of these islets that the fishery is carried on by the inhabitants of the neighbouring coasts. According to the information of the pilots, those of Porto Seguro, principally, send out 50 vessels every year during the northern monsoon ; they take cargoes of fish, of a good quality, which are called *Garoupas* ; these are dried, and then compose an ordinary food for the people and slaves. The vessels generally remain out for six weeks.

It is, therefore, clear, that the only object which a ship may hope to find, by touching here, during a part of the year, is relaxation for a crew fatigued from sea, or for repairing damage caused by accident or bad weather.

On the West of the Abrolhos is the channel distinguished by the same name, and which is bounded on the West by the extensive banks and reefs named the *Pracel das Paredes*, on which are many rocks even with, and some above the surface of the water. These banks and the shore within them are very imperfectly known, not having yet been properly surveyed ; but they are represented in two great divisions, and separated by a space of 3 leagues in breadth, from North and South. Their outer edges are from 8 to 10 leagues from the coast, and they are so steep as to have acquired the name of *Paredes*, or *Walls*. The extent between their northern and southern parts, from the parallel of  $17^{\circ} 29'$  to  $18^{\circ} 9'$ , is a distance of 13 leagues. There is said to be within them a small channel along shore, known to the coasters only, and not to be attempted without a most experienced pilot.

Within the parallels of the Paredes the coast comprises the towns of *Alcobaça*, *Carvelhas*, *Villa Viçosa*, and *Portalegre*, all of which communicate with the sea by rivers admitting the coasters.

The eastern side of the Paredes rises abruptly from the bottom of the sea, without indicating any diminution of depth. From the edge of these banks, as well as in the middle of the Abrolhos Channel, in clear weather, the opposite coast may be seen. This coast is flat, and covered with trees, which, at this distance, appear as if nearly overflowed. Hence, also, the Abrolhos Islets may be seen. The Baron Roussin gives the position of Sta. Barbara, the eastern islet, as latitude  $17^{\circ} 57' 44''$  S., and  $38^{\circ} 41' 47''$  W., and Captain FitzRoy gives it as  $17^{\circ} 57' 42''$ , and  $38^{\circ} 41' 30''$  ; but we take the longitude to be about five minutes more to the East. *Variation of the compass* here, in August, 1819,  $0^{\circ} 46'$  W.

In the Abrolhos Channel, with the exception of a few spots of 7 fathoms, the general depths are from 14 to 9 fathoms. The direction in which there is the most water is nearly S.S.E. and N.N.W., in passing at two miles to the West of the islets. Large vessels may anchor in this direction from the islets at the distance of from 1 to 8 miles.

The Baron Roussin says that, although this channel is 3 leagues wide, it is of little consequence to large ships ; but a letter from a naval commander at Rio dated in October, 1834, says, " We sailed round the Abrolhos Isles, and found the inside channel perfectly safe. In daylight and favourable weather any ship may sail inside them without risk."

It has been stated that H.M.S. *Doris*, by adopting the inner channel, in 1823, made the passage to Bahia from Rio Janeiro in half the time that the *Conway* did, by keeping well outside. The *Doris* sailed from Rio after the *Conway*, and arrived before. The *Doris* had smooth water and favourable weather, while the *Conway* had a troublesome sea, and much wind. (*Editor of the Nautical Magazine*, January, 1835, p. 52.)

In the remark-book of H.M.S. *Tartar*, 1823, Mr. Wood, the master, says, The Abrolhos are low, and their vicinity should be approached with caution ; but, with due attention to the lead, they may be passed with safety ; and should a vessel be so situated, while attempting to pass them, either from the southward or northward, as not to be able to weather them without tacking, they will find a safe channel to the westward of them and of some rocks just appearing above water.\*

\* It appears that from E.S.E. to South, by the North and West, vessels of moderate size may, with precaution, approach to a sight of the islets, and anchor at a distance from them, or from one to eight miles, from N.W. to the South by the West. There is no part between the South and the S.E. on which there is any uncertainty ; but it has been shown, in descriptions formerly given, that this part is not much more dangerous than the other. *Pimentel*, in alluding to an exploration of the coast, in 1605, says that several rocks, some of which were uncovered at high water, existed in the direction of S.E. from the islets in a space of about three leagues. In admitting this as correct, it will be seen that, in the only part not lately visited, the dangers do not extend much more to the S.E. of the isles than in the other directions.

Lastly, *Captain Fitz Roy*, of H.M.S. *Beagle*, 1832, has said, "Having made both passages, I venture to observe that going within the Abrolhos certainly shortens that between Rio and Bahia very much; but yet I would not recommend it to any vessel unless she has reason to make unusual haste. The soundings are very irregular, varying suddenly from 20 to 6 fathoms; and there are both reefs and currents."

The *Tides* are irregular in the vicinity of the Abrolhos; the currents follow the direction of the prevailing winds; and their velocity, when the Baron Roussin was here, did not appear to exceed one mile and three-tenths in the hour. The difference of level between high and low water was taken at 5 feet on the full and change.

In a letter addressed to Captain Beaufort by Captain Fitz Roy, 10th April, 1832, this gentleman has said, "On the 18th of March we sailed from Bahia, and worked our way slowly toward the eastern limit of the Abrolhos Banks. The winds, being light and easterly, favoured our sounding frequently, and taking good observations.

"Having reached the parallel of the Islands, to the eastward of the easternmost soundings laid down in the charts, and finding no ground with 300 fathoms of line, I began to steer westward, sounding continually, and keeping a sharp lookout at the masthead. At two *p.m.* on the 26th, we had no bottom with 230 fathoms, and at four *p.m.* we found only 30 fathoms, without the slightest change either in the colour of the water or in its temperature, or any indication of so sudden a change in its depth.

"I directly hauled to the wind and worked back again to the eastward, to have another opportunity of confirming the place of the edge of the bank. We lost soundings as suddenly as we had found them; and, in standing to the westward a second time with a grapnel towing astern, by 200 fathoms of line, we hooked the rocky bottom and straightened the grapnel; but my object in ascertaining the exact beginning of the bank was gained.

"From that spot we had soundings in less than 40 fathoms, until we anchored near the Abrolhos Isles.

"I passed to the southward and eastward of them, because that side had not been examined, but time would not allow of my doing what I wished while so favourable an opportunity offered.

"At least a fortnight would be necessary to complete the survey of Baron Roussin, which appears, so far as we have examined, to be extremely correct. The soundings are so irregular, that little dependence can be placed on the lead. It is only by a multitude of soundings, by watching the sea when there is much swell, and traversing every part with a sharp lookout at the masthead, that the neighbourhood of the Abrolhos, particularly to the S.E., can be thoroughly examined.

"More than once we had 4 or 5 fathoms under one side of the vessel, and from 15 to 20 under the other side. The *sauts de sonde* [skips of bottom], as the French express it, are surprising.

"The tide, or rather current, which we experienced, set continually to the southward for the three days that we were near these isles, varying from half a mile to a mile and a half an hour.

"I supposed that the bottom was composed chiefly of coral rock, but was surprised to find no coral, excepting small fragments growing on the solid rock, which is chiefly gneiss and sandstone. As most of the charts say '*coral rock*,' I have sent a few of the soundings for your inspection, and you will see by them that what has been here called coral is the coating of a solid rock formed by the deposit of the sea-water, mixed with coralline substances, and what a sailor generally calls barnacles.

"My meridian distance of the Abrolhos Rocks from Bahia, their latitude, and their size, agree precisely with those given in the French survey. But between Bahia and Rio de Janeiro, and consequently between the Abrolhos and Rio de Janeiro, there exists a difference of from 4 to 5 miles between us: this being the only point on which I have found any such difference either on this or on the *Beagle's* former voyage."

The Baron Roussin has said that an oozy or muddy bottom is rarely found on the ground

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On the bank of soundings upon which the Abrolhos are based, it appears that, generally, the depths vary abruptly; and frequently, in small spaces, deepen from several feet to as many fathoms. These undulations appear nearly in a North and South direction.—*Roussin*.

• Journal of the Royal Geographical Society, Vol. II. pages 315, 316.



of the Abrolhos; the presence of oaze in the soundings being a certain indication that you are without the shoals. He found no part without a large mixture of sand and broken madrepora or bits of coral, and in the interior channel only; and he adds that the quality of bottom, most common around the Abrolhos, is a whitish sandstone, composed of the debris of madreporas, and of a greater or less consistence; sometimes this stone is very firm, combined of sand and rock, mostly to the N.E. of the islets. Nearer to these, from S.S.W. to N.E., by the West, the bottom consists of ground like white mortar, in which the anchor penetrates but little, though it holds fast.

In the neighbourhood of the Abrolhos you have coral bottom; after passing them at the distance of 30 miles N. or S., you will have a bottom of light brown sand and shells; the current sets strong over the shoals in a S.S.W. direction. About 30 miles westward of the islands we found a current setting at the rate of 20 miles a day; no doubt with heavy northerly winds they are much stronger, as the currents on this coast are much influenced by winds. When the Abrolhos Islands bear S.S.W.  $\frac{1}{2}$  W., they appear like two hillocks with high table land inside of them: the soundings are from 14 and 16 fathoms, broken shells and bottom rock resembling coral.—*Mr. Jeffery.*

On the low shore, in latitude  $18^{\circ} 36'$ , is the little river of *San Matheo*, described hereafter. At four or five leagues to the North of this parallel commence the soundings which announce the grounds of the Abrolhos and Paredes. In circumscribing these banks, the islets, and the shoals, in depths under 20 fathoms, an extent of 20 leagues, East and West, may be assigned; and it follows that a large vessel, unnecessarily, should never run to the westward of the meridian of  $37^{\circ} 40'$  between the extreme parallels of the shoals, or  $17^{\circ} 30'$  to  $18^{\circ} 15' S.$ , where about, upon the bank, a depth of from 20 to 25 fathoms may be found.

In following, from North to South, the meridian of  $37\frac{1}{2}^{\circ}$ , from the parallel of  $17^{\circ} 40'$  to that of  $18^{\circ} 10'$ , the soundings skip, at certain places, from more than 100 to 24 fathoms, rocky bottom, indicating, as very probable, a still less depth; but, on a search several miles more to the East, no bottom was found with the common lead. In longitude  $37^{\circ}$ , no ground at 200 fathoms.

#### IV.—THE COAST FROM THE ABROLHOS TO CAPE FRIO, INCLUSIVE.

**SAN MATHEO.**—The little river of *SAN MATHEO* has been noticed above. Little advantage can be gained by coming to the bar of this place. The difficulty of the entrance, wherein there are only  $4\frac{1}{2}$  feet of water, in ordinary high tides, and 9 feet on the syzygies, does not allow access to any but very small vessels; and the breakers, which constantly appear at the mouth, render the navigation dangerous, even to canoes. The people of the country get over this sort of passage only with punts, drawing very little water, or on the rafts called *jangadas*, formed by uniting four or five pieces of timber, surmounted by a cotton sail.

The entrance forms a small opening, with breakers on either side, within which may be seen, among the trees, the masts of boats. It is said that, in fine weather, you may see to some distance to the interior; and at a little to the South of the bar, three small downs, of which the middle one is the highest, and which serve as a mark from the eastward. The bar is in latitude  $18^{\circ} 37' 10''$ , long.  $39^{\circ} 38' 40''$ .

#### POSITIONS OF THE PRINCIPAL POINTS, ETC.

	Latitude S.	Longitude W.
Rio Doce; West point of the Entrance . . . . .	$19^{\circ} 36' 57''$	$39^{\circ} 45' 30''$
Serra dos Reis Magos; Southern summit . . . . .	$19 50 27$	$40 16 17$
Morro Almeyda . . . . .	$19 57 20$	$40 12 30$
Mestre Alvaro; the summit . . . . .	$20 8 54$	$40 15 46$
O Tubarão; Rock near the Cape . . . . .	$20 16 23$	$40 10 0$
Cape Tubarão; S.W. point . . . . .	$20 16 22$	$40 11 0$
VICTORIA; Piton to the North of the town . . . . .	$20 17 49$	$40 16 40$
Dangerous Rock in the Bay of Espirito Santo . . . . .	$20 18 32$	$40 11 28$
Cape Penedo in the River . . . . .	$20 19 16$	$40 16 3$

	Latitude S.	Longitude W.
Nossa Senhora da Penha; Church . . . . .	20°19' 34"	40°13' 35"
Rock Balea, in the entrance of the river . . . . .	20 18 50	40 12 37
Mount Moreno; the summit . . . . .	20 19 23	40 12 0
Pacotes Rocks; the largest . . . . .	20 21 2	40 10 15
Isle Jicu; the summit . . . . .	20 23 9	40 12 30
Point Jicu; the summit . . . . .	20 26 1	40 14 30
Ilha Razas (Low Isles); the middle . . . . .	20 42 42	40 16 15
Isle Calvada; the middle . . . . .	20 44 8	40 19 30
Guarapari; steeples on the S. side of the bay . . . . .	20 43 56	40 25 15
Morro Bo (an insulated mountain) . . . . .	20 47 34	40 33 50
Morro of Benevento; summit . . . . .	20 55 21	40 41 38
Serra de Guarapari; western summit . . . . .	20 50 15	41 3 15
Serro do Pico; highest part . . . . .	21 1 30	41 13 0
—————; Fourchu Hill, to the West . . . . .	20 58 23	41 31 35
Mount Campos; southern summit . . . . .	21 22 38	41 21 56
Mountains of Furado; the highest . . . . .	21 49 58	41 37 30
St. Anna's Isles; the largest . . . . .	22 25 0	41 40 0
Peak of Frado de Macahé . . . . .	22 12 2	42 5 0
Morro of San João; summit . . . . .	22 32 26	41 59 0
Isle Branca, or White Isle; summit . . . . .	22 43 42	41 52 30
Cape Busios; extremity . . . . .	22 46 3	41 49 30
Ancoras Isles; the easternmost . . . . .	22 46 26	41 45 0
Papagayos Isles; the N.E. Isle . . . . .	22 52 9	41 51 45
CAPE FRIO; northern summit . . . . .	22 59 55	41 56 30
—————; the southern point . . . . .	23 1 18	41 57 30

The communications between the sea and the interior of Brasil, by the mean of rivers, are, in general, very difficult; and they are particularly so in the river of San Matheo, as well as in a great number of other rivers which resemble it, and which we shall have occasion to notice hereafter. The pilots say that the river of San Matheo turns to the North above the entrance, after which it has many sinuosities. The little town which bears its name is at seven leagues from the entrance.

At 36 leagues to the southward from the Bar of San Matheo is the *Point Tubaraõ*, on the North side of the Bay of *Espirito Santo*. The coast between, generally low and sandy, is broken by the mouths of the small rivers, named *Rio Seca*, *Rio Doce*, *Reys Magos*, and *Carahype*, which are all unimportant to navigators. No danger is to be apprehended on this coast until you reach Point Tubaraõ, from which point a reef of rocks extends to the distance of 700 fathoms: with this exception you may approach any part of the coast. At two or three miles off, whether advancing from the North or the South, the depths are from 20 to 9 fathoms, bottom of sand, mixed with gravel, oaze, madrepores, and broken shells.

**RIO SECA.**—The Bar of the Rio Seca is ten leagues to the southward of that of San Matheo, and presents only a small opening between the trees on the coast. It is probable that this river exists only during rainy weather, and the supposition seems confirmed by the only information obtained concerning it.

**RIO DOCE.**—The entrance of the Rio Doce lies in latitude 19° 36' 57", long. 39° 45', ten leagues to the southward of the Rio Seca. It is said to extend far up the country, but its entrance is too small to admit large vessels: it, however, appears like a large open space between the trees, with which the coast is covered. A bank of red sand extends from each of its two points, and the entrance is again obstructed by another bank of sand, which rises above water; but there are no islands before the river, as shown on some old charts. The northern point extends out a little more than the other, and has on it a large house.\*

From the Bar of the Rio Doce to Ponto do Tubaraõ, or Shark's Point, the distance is about 16 leagues, and the general trend, with some inflections, S. 32° W. Great part of the coast is low, covered with trees, and the shore is of red sand; but all the interior, from the Rio San Matheo, gradually rises to the westward; and for ten leagues northward from

\* It was stated, in a former description, that "the current of the river Doce is so strong that its waters are distinguishable by their colour to the distance of a league and a half at sea; that small craft only can enter the river, and these not without difficulty, from the impetuosity of the current, but it is navigable for boats and canoes more than twenty leagues."

Pont Tubarão the land is more elevated down to the shores ; it is only to the northward of the Rio Doce that the country, viewed from the sea, appears entirely flat, and it does not change this appearance till, in proceeding northward, you reach the offing of *Mount Pascal*, a distance of more than fifty leagues.

**ESPIRITO SANTO**, or PORT VICTORIA.—The entrance of this bay may be readily known, in advancing either from the North or the South, by conspicuous marks, seen from the offing. These are two mountains, whereof the one, situate on the South point of the bay, is named *Monte Moreno*, and the other, North of the bay, bears the name of *Mestre Alvaro*, which the pilots pronounce *Mestialvé*.

*Mount Moreno* is conical and partly woody, but devoid of verdure on the eastern side, and it may be seen, in clear weather, at 10 leagues off. Its base forms, on the North, the South side of the entrance of the river of Espirito Santo. At  $2\frac{1}{2}$  miles to the S.E. of it are two rocks of unequal size, named the *Pacotes* : and at about a mile S.  $60^{\circ}$  W. from *Mount Moreno*, is the *Morro of Nossa Senhora da Penha*, a rocky hill, on the summit of which is a handsome church of the same name, and which may be seen at a distance of five leagues.

The elevation of the *Mestre Alvaro* to the northward, its form and insulated position on a land rather low, renders this mountain equally remarkable ; and it is to be noticed, that it succeeds the low lands of the North, and nearly terminates the high lands of the South, so as to leave no doubt, when it is in sight, as to the position of the vessel, even when the latitude is uncertain, or cannot be obtained.

Two islets, situate at a short distance to the N.N.W. of *Monte Moreno*, occupy a great part of the harbour of Espirito Santo ; but, although the space comprised between these isles and the hill is much obstructed by reefs and two rocks, *la Balea* (the whale), and *le Cavallo*, yet there is a sufficient passage for large vessels entering the river, and it may be seen, by the plan of the bay, that it has not less than 18 feet of water. This passage is very narrow, but the pilots say that it is the best.

To a stranger the best anchorage appears to be without the entrance, in 12 or 13 fathoms, whence the college at Victoria will be in a line with the northern base of *Mount Moreno*. Here you will have a bottom of oaze, good holding ground, and be a mile without all danger ; and here you will be in a line of direction for proceeding upward, with the assistance of a pilot.

A visit to the Bay of Espirito Santo may be useful and interesting to the mariner. At a league above the town of Victoria, and even in the town, very good water may be obtained. At the habitations on shore you may also procure wood, cattle, and an abundance of fruits of the country, at a moderate price. M. Roussin adds, We do not think that the climate of this town is very wholesome, as we found it extremely humid. The height of the mountains and lands around, and the great cut of the river, on the North shore of which the town is built, account for this condition. At a thousand fathoms to the East of the meridian of the town is an enormous conical rock, named *Paó de Açucar* (*Sugar-loaf*), for which you steer on entering the river, so soon as you have doubled *Mount Moreno*.

The town of VICTORIA, capital of the province, and built like an amphitheatre, on the side of the river, may contain 3,000 or 4,000 inhabitants. If the entrance of the river be as deep as reported, the port must be a good one, as within the bar are found, in some places, from 50 to 60 feet of water.

*Mount Moreno* is situate in  $20^{\circ} 19' 23''$  S. The variation near it, in July, 1819, was  $1^{\circ} 2'$  E. Rise and fall of tide in the anchorage, about 4 feet. The tides without the entrance are not regular. Within, on the full and change, it is high water at three o'clock.

**ESPIRITO SANTO to BENEVENTE**.—Near the land, to the southward of the *Pacotes*, are the islets and rocks of *Jicu* ; and at 13 miles more to the southward are the *Guarapari Islets*, between which and the land is a passage for small vessels ; and all may advance to the eastern side of them, for there is a depth of 7 fathoms. Farther South, about a league, are the low islets called the *Razas* ; and farther on, at an equal distance, is the islet *Calvada*, at four miles from the coast. Large ships may pass within the *Razas* and *Calvada*, as the depths are from 18 to 11 fathoms.

The River GUARAPARI, to the West of the islet *Calvada*, falls into the sea between two woody hills, of which that to the South is distinguished by some palm trees, visible in the offing, many houses, and a church with a steeple. The latitude of the last is  $20^{\circ} 43' 56''$ . The hill to the South is named in the country *Perro de Caô* ; the other is the mountain of



*Guarapari.* The latter is the highest ; and it appears that, to enter the river, it should be to the N.W.

The coast hereabout, and to the northward, is of moderate height, almost covered with small trees, close to each other, and having, at certain distances, low yellowish cliffs, which are not found to the southward of the Point of Benevente, which is 14 miles S.W. from Guarapari, in lat.  $20^{\circ} 53' 50''$ . In the interior of the country are several groups of remarkable mountains, upright, conical, and inclined, which give to this part of the coast a character different from that which precedes it to the North, and follows it to the South.

*From the parallel of the Point of Benevente to that of the isles of St. Anne, in  $22^{\circ} 25' S.$ ,* the shore is at a great distance from a chain of mountains in the interior, leaving between them an extensive plain, very low, and extending in some parts 13 leagues. At this distance from the mountains lies that elbow of the coast named *Cape San Thomé*.

This part of the shore of Brasil is nearly level with the sea, and you will perceive only some trees and small patches of land at a distance ; the country appearing as if overflowed. Prudence will, therefore, dictate a sufficient offing. A considerable tract hereabout was only superficially examined by the Baron Roussin, and the information imparted to him by the coasters was erroneous, but the deficiency has been in a great measure supplied from the information of British officers.

At about five miles S.W. by S. from the islet Calvada, near Guarapari, the soundings are irregular, and there is frequent occasion to haul out, in order to keep a depth of 12 fathoms. Such soundings extend out about four miles to the S.S.W., and the water about them is discoloured. The least depth found was  $6\frac{1}{2}$  fathoms, and danger, if any, will show itself plainly ; for the water shoalens very suddenly from 12 to 8 and 6 fathoms.

An islet named *Francesa* lies at about four miles from shore, in latitude  $20^{\circ} 58'$  ; and a reef, having 7 fathoms close to it, stretches about a quarter of a mile from its N.E. point. Between the islet and main the depth is not more than 3 fathoms, shoaling gradually with a hard bottom. There is anchorage in 7 fathoms, sandy ground, with the islet N.W. by W.  $\frac{1}{2}$  W. three quarters of a mile.

At about 6 miles S.S.W.  $\frac{1}{2}$  W. from *Francesa* is another islet, *Piuma*, small and low, with reefs extending about half a cable's length from the N.E. and S.W. points. In the passage between it and the land are  $5\frac{1}{2}$  fathoms, sandy bottom.

About seven miles S.S.W. from the islet *Piuma*, and at nearly five miles from shore, is a sand bank of 4 fathoms, with 9 and 10 fathoms on each side of it ; but shoaling gradually toward the land. Its length has been estimated at a mile and a half long, N. and S., by one-quarter broad. The water on approaching and receding shoalens and deepens very abruptly. Off *Point Murubu*, in latitude  $21^{\circ} 11'$ , there is an appearance of breakers, at two miles from land.

From *Point Murubu*, in lat.  $21^{\circ} 11'$ , to *Cape San Thomé*, in  $22^{\circ} 2'$ , the coast is generally a low sandy beach, thickly covered with brushwood, having here and there a stunted tree. The cape, as it is called, terminates in a low sandy point ; the country, to a great extent within it, is low, and intersected by many rivers and lakes.

*The soundings off Point Murubu* are very irregular, 13 to 9 and 6 fathoms ; the water thence deepens suddenly, with a hard rocky bottom. S.E. from this part of the coast, 10 or 11 leagues off, there are 20 to 22 fathoms of water, and bottom of very fine white sand ; but hence toward the shore on the West, and toward *Cape St. Thomé*, it gradually becomes coarser and more regular.

It has been noticed, as an indication that may be useful, that, in the vicinity of *Cape San Thomé*, the oazy bottom, so common to the South of this parallel, almost entirely disappears, being here succeeded by a bottom of sand and broken shells ; these are, at least, the qualities of bottom found on the survey, from the coast to the distance of 10 or 12 leagues off. It may be remarked again, that at several leagues to the South of the parallel of *Belmonte*, (described in page 135,) or about  $16^{\circ} 20' S.$ , commences a bottom of white tufa or sandstone, mixed with, or formed of, broken madrepores, which extend far to the northward, and which is scarcely if at all found in the South.

**CAPE SAN THOME.**—A bank to the north-eastward of *Cape San Thomé*, formerly omitted in the charts, has been explored, in consequence of one of those accidents by which so many dangers have been made known. On this shoal, as we have been informed by Captain Livingston, the ship *Earl of Morley* struck and lost its rudder, and a Jersey vessel has been wrecked. It extends 12 miles out from the land ; the general depth of water on

it is uncertain, but on one spot only three feet were found. There is a passage between the shoal (now called the *Morley Bank*) and the land.

From a delineation of the shoal by Mr. Napier, R.N., master of H.M.S. *Wellesley*, 1825, it appears to be a rocky bank, of an oval form, and four leagues in diameter. The southern edge in a line with Cape St. Thomé bearing nearly E.N.E.

From the river *Parahyba do Sul*, or the parallel of  $21^{\circ} 37'$ , northward to lat.  $21^{\circ}$ , the coast gradually heightens, and has several remarkable hills inland; but in  $21^{\circ}$  the beach is not more than from 30 to 40 feet above the level of the sea. In about  $21^{\circ} 10'$  are three remarkable red cliffs, close together, the largest being to the southward. In about  $21^{\circ} 28'$ , at some distance inland, is a remarkable sugarloaf hill, tapering to a fine point or peak at the summit.

From the parallel of  $21^{\circ}$  to  $21^{\circ} 10'$ , the soundings are very irregular near the shore, frequently altering 3 or 4 fathoms at one cast of the lead; at six miles from land, 5, 7, 10, and 13 fathoms have been found. Hereabout the great bank of soundings appears to be steep on the outside, deepening suddenly from 26 fathoms to no ground at a depth of 100 fathoms. In all the space of 9 or 10 miles over these irregular soundings the bottom is of rotten stone and coral, changing on the outer edge to coral and shells.

On approaching Cape San Thomé the soundings are very regular, over a sandy bottom, and on approaching the shoal the ground becomes finer; a few casts of mud may be found, but the bottom, generally, is of fine sand.

The eastern extremity of the Shoals of San Thomé, having  $4\frac{3}{4}$  fathoms, appears to bear from the cape between East and S.E. 7 or 8 miles. H.M.S. *Jaseur*, Captain Martin, in November, 1825, crossed in the last-mentioned depth, and a native smack, about a mile and a half within, from that ship, had 4 fathoms. The least water found upon this shoal, on examination, inshore from the ship, was 3,  $3\frac{1}{2}$ , and 4 fathoms.

On approaching the cape the water deepened to 5 and 6 fathoms, forming a channel within the bank, the depths in which have not been ascertained.

About the Barra de Furada, to the westward of Cape S. Thomé, there is little else than barren sandy flats, with a few fishermen's huts at the entrance.

In  $4\frac{1}{2}$  fathoms, and close to the breakers of Cape San Thomé, the current has been found so very strong that a ship with difficulty got out again. In  $3\frac{1}{2}$  fathoms to the southward the water was so much agitated, and the current so strong over the breakers, that even a small vessel could not attempt it without danger.

A ship falling in with this part of the coast during the months of April, May, and June, may make toward the land in safety, only taking care not to enter into less than 10 fathoms when off the cape; as it is probable that there will be a current setting south-eastward, at about two-thirds of a mile in the hour.\*

**St. ANNE'S BAY.**—The large bay, formed between Cape San Thomé in lat.

\* On the 29th of November, 1834, the Brazilian frigate *Principe Imperial*, in steering S.W. by S. in the latitude of Cape S. Thomé, and longitude  $40^{\circ} 30'$ , at 8 a.m. sounded in 32 fathoms; at 3h. 15m. p.m. in nine, and at 3h. 20m. in six and a half five; the ship running between 5 and 6 knots, a dark squally morning, with all sail set. No time was lost in shortening sail, and the small bower anchor cutadrift, when the ship was in half four. Her draught was 22 feet, and a heavy swell on at the time.

At daybreak the shoals of S. Thomé, breaking very high, bore W. by N. one mile distant. At this time it cleared away, and they could see nearly 30 miles from the masthead, but no land was to be seen.

On the ship running out E. by N. at the rate of two knots for three hours, the soundings were very irregular, from 5 to 7 and 8 fathoms, and then lessening to 5 and  $4\frac{1}{2}$  sand. Off the shoals soundings were obtained in 26 fathoms, after having run off at least twenty miles.—*Naut. Mag.* Apr. 1825, p. 193.

"— I feel satisfied that no shoal, on which a vessel could ground, over which the water would break, lies so far from the land as the one mentioned in the *Nautical* (as above), on the authority of the officers of the Brazilian frigate, *Principe Imperial*. With a foul wind, I stood in on the parallel of the shoal, with the lead going carefully and regularly. The soundings were not very regular, but we carried deep water far within the position where the shoal is represented to be, and with a good lookout could see nothing indicating a shoal, although there was a fresh breeze blowing at the time. I also, when at Rio Janeiro, questioned several Englishmen, commanding the Brazilian steamers trading on the coast. One of them, in particular, a well-informed, careful man, showed me his chart, with many tracks well within and over the position of the shoal, and declared his firm belief that it does not exist. I would not, however, have it erased from the charts. Detached shoals are very difficult to find, and the navigator will do well to pass its parallel with caution, particularly in the night."—*Mexicano*, *Naut. Mag.* Dec. 1842, p. 801.

22° 2' and Cape Busios in 22° 46', is named *St. Anne's Bay*. The distance between these points is nearly 22 leagues. The bay is deep and spacious; in rough weather the surf is violent, and the broken water runs up a long inclined plane. Mr. Luccock says, when the sea is serene, and the ripple comparatively light, it eats away the sands, and forms a flatter beach, with a perpendicular boundary, wherein the laminated appearance of the sand is remarkable. To the southward the shore is covered with shingles, and when it meets the high rocks beyond the river Una, in the S.W. part of the bay, it becomes bold, stretches to the eastward, and forms the point of *Buzios*, called in some charts *Cowries Point*. Near the mouth of the Una is the small secure bay of the *Armação*, or *Armazem*, affording refuge to vessels baffled in their attempts to double the cape, and when the wind blows hard from the East. The entrance is between two small rocky islands, called, from their different appearance, the *Beautiful* and the *Ugly*. The anchorage lies to the south-eastward of the entrance.

The *Morro of St. João*, on the North bank of a river of the same name, is a conspicuous mark for the bay of St. Anne. Its situation is lat. 22° 32' 26", long. 41° 59'.

Within the bay, at the distance of fifteen leagues from Cape San Thomé, are three islets, named the *Islets of St. Anne*. These, seen from S.S.W. and N.N.E., appear united. The southern isle is the highest, and the lowest is to the East. According to the pilots the channel between them and the main is so safe, that you may here repair any damage, and careen the vessel if required. The depth to the southward of the isles, at four or five miles from land, is from 17 to 27 fathoms; oazy bottom.

From the *Barra de Furada* toward St. Anne's Islands the depths are regular, there being 9 or 10 fathoms of water, sandy bottom, within five or six miles of the land. At four or five leagues from the coast are from 20 to 22 fathoms, muddy bottom. This sort of bottom extends across to Cape Buzios, with 29 and 30 fathoms; a change to sand is a proof of approaching the land.

Off the N.E. part of St. Anne's Isles are several barren rocks; on the N.W. side of the isles is anchorage, in 7 and 8 fathoms, well sheltered from easterly and S.E. winds, but exposed to the S.W. and N.E., but with the latter there is seldom much swell. The proper route to this anchorage is by the S.W. through a clear passage, with 10 and 12 fathoms, close to the isles, near which is the deepest water.

From off the North end of the largest isle a sandbank stretches to the S.W. and W.N.W., with three to five fathoms over it, the greatest depth being at above halfway across the passage toward the main. This, therefore, impedes the passage from the N.E.; but the ship may beat out of the S.W. channel. Large vessels attempting the latter should carefully keep the S.W. end of the larger island to the eastward of S.E., because the water shoalens suddenly on the S.W. side of the bank, and likewise toward a sandy beach on the large island.

About St. Anne's Isles the soundings are regular, excepting on the bank which extends westerly from the North end of the larger island. This bank is steep to on both sides, the water suddenly shoaling from 7 to 4 and 3 fathoms, bottom of mud, but on the outside of the islands sand only.

From the anchorage, in 7 fathoms, at three-quarters of a mile from the sandy beach on the large island, the bearings are, the S.W. point of the large island South; the northern part of the same, E.  $\frac{1}{2}$  S.; the outer point of the S.W. island, N.N.E.; and the islet Ferro, at the entrance of Macabe river, N.W. by W.  $\frac{1}{2}$  W. Large ships should bring up farther to the southward, keeping the S.W. point of the large isle about S.E. one mile, where there will be found 7 or 8 fathoms, at a sufficient distance from the shoal.

There can be no difficulty in gaining the anchorage at any time; only recollecting that the passage to it from the N.E. is hardly of sufficient depth for large vessels.

About the middle of the sandy beach of the large island there is a passage, through the trees, to a well of scanty and indifferent water; but firewood may be obtained here in any quantity, close to the beach.

**JERVIS BANK.**—Off Cape San Thomé there lies a bank of soundings, found by H.M. pilot, *Captain Jervis*, which we have named as above; the following are the particulars:—"On December 6, 1843, a.m., running for Rio Janeiro, found the water very much discoloured, sounded in 35 fathoms sand; at 10 h. sounded in 25 fathoms; at noon, lat. 21° 44' S., long. 39° 35' W., then 16 $\frac{1}{2}$ , shoaled the water gradually, until we had in the star-board chains 15 fathoms, and in the port chains barely 9 fathoms. This continued until



4 p.m., and then shoaled to  $\frac{1}{2}$  12 fathoms, going 3 knots, breeze increasing; then deepened to 16 and 17 fathoms, and shoaled again to  $12\frac{1}{2}$ ; at 4 h. no bottom with 20 fathoms, at 5 h. leadmen in. Lead hove every half hour till midnight; Cape Frio bearing at noon S.W. by W.  $\frac{1}{2}$  W.  $140^\circ$ ; Cape San Thomé, W  $\frac{1}{2}$  S.,  $80^\circ$ ; Espiritu Santo, N.N.W.  $\frac{1}{2}$  W.  $109^\circ$ .\* This is the account we have of it; but the given bearings place it several miles to the S. and E. of the lat. and long. stated. We have, therefore, marked the position as doubtful on the chart.

**SAN JOAO DE MACAE, or MACAHÉ.**—In the bay within St. Anne's Isles is the village of *Macahé*, situated between the northern bank of the river *Macahé* and the sea-beach. It consists of about 150 houses, neatly painted and whitewashed; for the most part small ones, and of a single story, with a few of superior size and pretensions, on a rising ground, near the mouth of the river; where, also, near the summit, stand the church and flagstaff. The mouth of the harbour is not more than seventy yards broad, and unfit for the entrance of vessels of more than 200 tons. If the flag be hoisted, it is a signal that the entrance is safe. In going in, a vessel must steer close to the South side of the rock; and, when she comes abreast of it, should let go her anchor, with about 15 fathoms of cable. If she overshoot this berth, she must put the helm hard a starboard, and run between the southern point, where there is a channel eight feet deep and two miles long, with remarkably clear water. A little South of the mouth of the harbour, and close to the shore, lies a ledge of rocks, which must be carefully avoided.

The mouth of the river *Macahé* bears N.W. by W.  $\frac{1}{4}$  W. from the largest St. Anne's Isle, with the islet *Ferro* off the entrance, a barren rock, with some bushes upon it. There are two or three rocks at about three-quarters of a mile from the islet, over which the sea breaks, but there is a passage on either side.

In the river water may be obtained in any quantity; and a supply of refreshments, by giving two or three days' notice, as they must be procured from the interior country.

At times, the water from this river, on running toward the S.W. passage of St. Anne's Isles, appears much discoloured, like that of a sandbank; but with a change of wind it resumes its proper colour. Such changes in the colour are attributed, not to shoals, but to rains in the interior, and the operation of the wind.

The *Morro of San Joao, or St. Joam*, may be easily known by its insularity on the coast, the undulation of its summit, and its distance from the chain beyond it in the interior. Its latitude is  $22^\circ 32'$ , in longitude  $41^\circ 59'$ .

At 20 miles N.  $\frac{1}{2}$  W. from this morro is seen another hill, very high, and surmounted with a peak, remarkable for its leaning toward the North. This is the *Frade* (Friar) of *Macacé*, or *Macahé*; it stands in lat.  $22^\circ 12' 2''$ .

**ANCORAS.**—At 7 leagues S. by W. from St. Anne's Isles lies the group called the *Ancoras*, or *Anchor Isles*. These consist of two islets and a large white rock lying to the southward of the inner one, and connected to it by a reef. The outer islet is 5 miles E. by S. from Cape Busios, and between the islets is a channel of 23 and 24 fathoms. The easternmost islet resembles a cardinal's hat. Small vessels, it is said, may pass between these islets and the land; and it is admitted by the pilots that the depth of water in the passage may allow vessels of every class to pass through.

To the northward of Cape Busios is the little isle *Branca*, or White Isle; then follows a beach of sand, which ends at the *Morro of St. Joao, or Joam*, with two or three small rivers, and the islet *do Ferro*, a barren rock, with some bushes upon it, as already described.

**PAPAGAYOS.**—The continental coast between Cape Busios and the *Isle Frio* forms a bay called *Papagayos*, or *Parrot's Bay*. The bearing and distance between its extreme points are S.S.W. 14 miles. A great portion of the bay is occupied by a group of islets and rocks, which do not appear to have been accurately surveyed.

At about six miles to the northward of the isle *Frio*, and at the North end of a low sandy beach, are a small fort and flagstaff, on the South side of the entrance of a little river, which falls down from the village of *Papagayos*.

**CAPE FRIO** is a high and rugged promontory, the south-western extremity of an isle bearing the same name, which forms, on its N.W. side, a convenient harbour, *Port Frio*, affording good shelter, although open to the N.E. The summit of the isle is in latitude  $22^\circ 59' 55''$ , longitude  $41^\circ 56' 30''$ .

**FRIO ISLE**, which forms the S.E. side of the harbour, is nearly three miles in length

from N.E. to S.W., and one mile in breadth. Great part of it is covered with an almost impenetrable wood. Beautiful flowers abound in every part, and these are not limited to the small class of plants, as there are large trees covered with the most luxuriant bloom; but there are also reptiles in most extensive variety, from the alligator to the green lizard, and snakes from one to thirty feet in length, many of which are beautifully variegated. Beautiful birds also abound, but few of them sing; and there are myriads of insects, many of which are distressingly troublesome.

*The Isle of Frio* may be seen, under favourable circumstances, at fifteen leagues off. When bearing from the East or the West it presents two mountains, one of which is 1,570 and the other 1,300 feet high, above the level of the sea: the southern is the smallest, both in height and breadth. On a N.N.E. and S.S.W. bearing these two mountains seem to form one mass, with a double summit, like two small points; at the same time will be seen a little conical islet, at one or two cables' length to the E.S.E. of the cape.

On all the shore, at the distance of a mile, from the North to W.S.W. by the South, are found from 27 to 45 fathoms of water, bottom chiefly of oaze.

Captain Mason, of H.M.S. *Blonde*, says:—"The cape is well known as one of the boldest and cleanest headlands in the world, high and remarkable in its outline, once seen easily recognised, readily made out from the views inserted in most of the current charts, and has regular soundings, extending from it for a considerable distance. Yet, because one or two unaccountable wrecks have taken place in its neighbourhood, it is frequently decried and dreaded as a formidable and dangerous promontory, instead of being regarded, as it really is, a faithful and intelligible landmark and monitor."

An official notice, dated Rio Janeiro, 28th of July, 1836, and given by order of the Minister of the Marine, signified that, from the night of the 12th of that month, a *Lighthouse*, called that of Cape Frio, would show a light, interrupted every two minutes by an eclipse of equal duration, instead of an ordinary fixed light, which had previously been exhibited. The light is visible, in very clear weather, at the distance of 41 miles.\*

PORT FRIO, or the harbour, is more than a mile in extent each way, and its depths are from 19 to 4 fathoms; but in the centre, 12 to 16 fathoms. Its great entrance is at the East end, on the South side of an elevated islet, named *Ilha dos Porcos*; this entrance is about two-thirds of a mile wide, and its depths are 25 to 15 fathoms, bottom of fine mud and sand. The entrance from the S.W. is very narrow, but has a depth of 10 and 12 fathoms, and there is anchorage almost immediately within it, for large ships, in 7 to 10 fathoms: farther in is a bar, on the shoalest part of which are only 10 and 11 feet; so that this passage is fit for small vessels only.

The harbour is commodious, and secure against all winds, excepting N.E., but even with the latter you may be sheltered by the little isle *dos Porcos*, (300 feet high,) which lies on the North side of the entrance. This anchorage, wherein the bottom is of good holding ground, is useful to the coasters, who can go out by either of the passes, according to their destination northward or southward, and the direction of the winds.

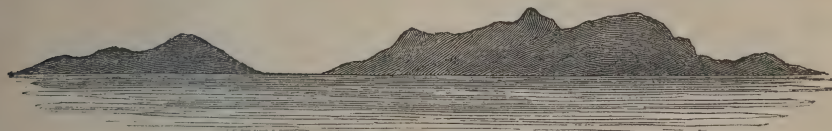
In time of war a signal post or telegraph is placed on a mountain to the West of the cape, and which, communicating with Rio Janeiro, denotes what is passing here.

A small fort, with four guns, stands on a rocky point between two sandy coves on the N.W. side of the harbour, and which entirely commands the principal entrance to the anchorage. A little within this fort is a village, occupied mostly by fishermen. There are some fine sandy places here for hauling the seine, which appears to be the chief occupation of the inhabitants.

Water may be had from wells in the coves on the North and N.W., as well as on the

\* The situation of the lighthouse was not defined, but that it is badly situated there can be no doubt. It is frequently invisible, and has caused the following remarks:—"Running down towards Cape Frio, it is advisable to keep about ten miles to the southward of its parallel, in order to prevent getting into the bay to the northward of the cape; and at night no one must trust to see the light at any distance, it being placed so high as generally to be enveloped in the thick fog or haze which hangs over the high land, particularly in summer. I made the land of Cape Frio in the night, running in with the lead going. We struck soundings, and saw the land low before the light, and it was only when very close that it could be discerned twinkling through the haze. Even when seen, it was very much doubted whether or not it was a star. Many have made the same remark respecting the light, and it has been represented to the authorities. It is rather surprising, therefore, that they have not altered its position. The expense of removal, however, and the cost of re-erection, are, I presume, serious obstacles with a poor government."—*Nautical Magazine*, Dec. 1842, p. 803.

island near its West end, where huts may be seen. The tide flows here, on full and change days, until 9 h., and its vertical rise is about  $4\frac{1}{2}$  feet. Variation of the compass,  $2\frac{1}{2}^{\circ}$  E.



*Cape Frio bearing W. by S. 25 miles.*

## V.—CAPE FRIO TO RIO JANEIRO, INCLUSIVE.

[For some remarks on the Winds upon the coast and at Rio Janeiro, by Captain Hewett, see pages 1, 2, and 3.]

The assumed situation of Cape Frio, as we have shown, is latitude  $23^{\circ} 1' 18''$ , and longitude  $41^{\circ} 57' 30''$ . This rugged promontory is the most remarkable headland, as well as the most important landfall, on all this part of the coast. From off this cape to the *Sugar-loaf*, on the West side of the entrance to Rio Janeiro, the course by compass is nearly West, and the distance 63 miles. The land between is mostly low and sandy; but at a distance from the beach it rises to a series of elevated and uneven mountains; an appearance interesting and picturesque.

At about half a mile from the extremity of Cape Frio, which is about halfway between the S.W. and West point of the island, is a cove in which H.M.S. *Thetis* ran ashore, and was wrecked, in the night of the 5th of December, 1830.

The *Thetis* having completed her period of service on the South American station, sailed for England from Rio Janeiro on the preceding day. Ships of war returning home from South America being generally freighted with treasure, the *Thetis* had on board 800,000 dollars. The weather, after she had sailed, proved tempestuous, and the wind blowing strongly from the eastward, the effect, as supposed, was a current that was fatal to the ship.

An interesting detail of subsequent events, and the singular means employed for recovery of the treasure, is given in the *Nautical Magazine*, March, April, and May, 1832, illustrated with a plan, by Lieut. Kellet, and two curious engravings. Of the 800,000 dollars, 620,000 were brought up from the bottom of the sea.

According to the report of the British officers, during their stay here for the recovery of the treasure, a small village was constructed near the cove, but whether it may continue seems uncertain. Roads were also cut leading to the cliff where the *Thetis* was lost. Previous to this event the island was totally uninhabited. The village, called *St. Thomas*, stands on an acclivity steeper than Portsdown Hill, in England, at about 100 yards from the beach on the West, with evergreen shrubs, bearing flowers, in the intervals between the houses; but it must be added, that half of the men employed here were at one time lame from the kind of flea called the *jigger*, so we may conclude that, fine as it is, the island will never have a numerous population.

Ships bound to Rio Janeiro, when approaching Cape Frio by night, with the wind easterly or S.E., must be cautious not to run into the bay to the northward of the cape: such mistake having proved fatal to several ships. This, however, can never happen in future, while the light on the summit of the island is visible. A considerable swell sets in with E.N.E. winds, which are most prevalent.

### POSITIONS OF THE PRINCIPAL POINTS, ETC.

	Latitude S.	Longitude W.
Cape Negro; the point	$22^{\circ} 57' 10''$	$42^{\circ} 40' 33''$
————; highest hill to the North	$22 52 38$	$42 39 5$
Maricas; Southern Isle	$23 0 53$	$42 55 32$
Raza; lighthouse	$23 4 17$	$43 9 20$
Redonda, or Round Isle; summit	$23 4 45$	$43 11 43$



	Latitude S.	Longitude W.
Nossa Senhora da Gloria; the steeple	22° 54' 42"	43° 10' 13"
RIO JANEIRO; Sugarloaf (1,292 ft.)	22 57 14	43 9 7
_____ ; Vilganhon flagstaff	22 54 31	43 8 55
_____ ; Isle Ratos, or Rat Isle	22 53 16	43 9 38
_____ ; Morro Corcovado; summit (1,580 ft.)	22 56 13	43 12 41
La Gabia, or Gavia	22 59 0	43 17 22

CAPE NEGRO, at 12 leagues to the West of Cape Frio, is the first remarkable prominence in that direction. It is formed by a small hill, the extremity of a range of mountains extending to the North, and is covered with a dark verdure, hence its name, and may be readily known. Being steep-to it may be approached safely. Within three miles of it the depths are from 18 to 27 fathoms, bottom of soft oaze.

Between Cape Frio and Cape Negro the sinking of the land is remarkable, presenting no object on the coast, excepting here and there a few little hillocks on a flat sandy shore, with some scattered bushes. One of these sandhills is distinguished by the ruins of a church standing on its summit, and dedicated to *Nossa Senhora de Nazareth*. This is about 3½ leagues E.N.E. from Cape Negro. Between this church and Cape Frio, within the low flat shore of *Maçambaba*, is a lagoon, which extends seven leagues, and has small openings to the sea.

At about two leagues from the coast the depths are from 27 to 36 fathoms, over a good bottom of oaze. At ten leagues are 68 to 80 fathoms, coarse sand, rocks, and oaze.

Two islets, named the *Maricas*, lie at the distance of 13 miles S. 79° W. from Cape Negro, and nearly 16 leagues West from Cape Frio, at about a league from the coast. They are of moderate height, steep-to on the South side, and may be approached safely. If, on the approach of night, or under particular circumstances, a vessel cannot reach the entrance of Rio, she may advance to and anchor here.

On the 24th of November, 1825, H.M.S. *Jaseur*, Captain Martin, anchored off the western side of these islets, in 17 fathoms, coarse sand and mud, with the rock off the southern island bearing S.E., the passage between the isles E.S.E., the northern end of the isles E.N.E. ½ E., and in a line with Cape Negro. During the mornings of the 24th and 25th, the boats were employed in sounding round and between the islands; in every part was deep water, and no dangers but what were in sight. The general depth to the westward of the islands was 10 and 12 fathoms close to the beach, with 14, 15, 16, and 17 fathoms, at the distance of a mile to a mile and a half. Between the islands and main are 13, 12, 11, and 10 fathoms, close up to the beach.

As this place is sheltered from the S.E. round by the North to W.N.W. and more West, with a fine sandy bottom, it may be considered as safe when the wind is to the northward and eastward, or to the northward and westward.

On the eastern side of the isles the sea commonly breaks with great violence, so that landing there is very difficult. The best place is near the N.W. end of the larger isle. In a small sandy bay, on the low part of this isle, is a well with good water, but it cannot be obtained without trouble in getting it off.

CURRENTS.—The general prevalence of the currents in the vicinity of Cape Frio appears to be to the southward, but varied to the eastward and westward, according to the strength and direction of the wind; and westward of the cape it is, *at times*, found setting to the N.E.\*

Having given in pages 9 and 10 the general observations on the Brazilian Currents, made by MM. Roussin, Hewett, and Lindley, it may not be amiss to introduce here an extract from Major Rennell on the same subject.

The Stream Current of the Eastern Coast of Brasil “is of inconsiderable breadth, till, increased by the accession of drift current by the S.E. trade, it arrives in 16° or 17° South, where, to the distance of 250 miles from the coast, the current runs to the South of S.W., and gradually declines to the southward till it becomes S.S.W., or nearly along shore to Cape Frio, where its rate was found to be 30 miles per day, at 200 miles from the shore. Here by the fall back of the land to the W.S.W., the direct current is thrown farther off

\* Some hours before and during the East and N.E. winds the current runs past Cape Frio to the southward, causing an easterly eddy along the South shore, which reaches nearly to Cape Negro.

With the wind from West to South, and previous to a change in that direction, an easterly current passes the cape, and extends some distance to seaward. The rate, in both cases, is from half a mile to a mile and a half in the hour.—Capt. Hon. F. de Roos, R.N.

shore; and, as generally happens in such changes of direction of the coast, a *counter current* in the bay runs to the N.E. within Cape Frio.\* Farther to the South, in  $30^{\circ}$  and  $32^{\circ}$ , the current is found again to run more westerly, conforming to the trending of the coast at the rate of 15 to 20 miles per day, and is found at 250 miles from the coast, extending to the North of the river Plata.

"*The Brasil Current, South of Cape Frio*, rests on the authority of Lord Anson's journal, Captain Cook, and the Russian Captains Krusenstern and Lisiansky; and the *counter current*, between St. Catherine's and Cape Frio, on that of Captains Krusenstern and Lisiansky, and Captain Torin, of the East India service."†

But, upon the whole, no dependence can be placed on the general set of the current; and it is clear, from what has been already said, that it is always uncertain. When the wind is fresh between the North and East it sets strongly to the southward and westward, and with a wind from the S.W. the current will set with equal strength north-easterly; the rate being in a ratio with that of the wind.

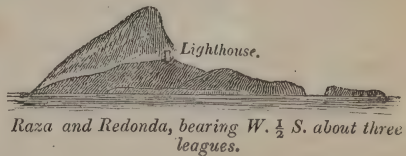
A bottle from H.M.S. *Maidstone*, on her passage to Bahia, in lat.  $18^{\circ} 20'$ , long.  $34^{\circ} 56'$ , 24th of April, 1832, was taken up on the beach of *Poxim*, about 500 miles N.  $8^{\circ}$  W. *true* from the spot in which it was dropped, 7th of June, 1832. Its daily rate cannot be known; but the mean of the drift must be, at least, 10 miles per day. This was in the southerly monsoon, between the parallels of  $10^{\circ}$  and  $18\frac{1}{2}^{\circ}$  S.

**RIO JANEIRO.**—The mouth of the harbour of Rio Janeiro lies between two islets, *Paya* and *Maya*, to the East of it, and a bold point, surmounted by the *Gavia*, a remarkable mountain on the West. In front of it are the islets *Redonda* and *Raza*, within and westward of which are several other islets. From *Paya* to *Gavia* the bearing and distance are about W.  $\frac{3}{4}$  S., 11 miles.

The islet *Raza* is low, and appears from the East like a slipper, with the sloping side northward. It is now distinguished by a *Lighthouse*, which was first lighted on the 31st of July, 1829. The light is so elevated as to be seen nearly ten leagues off. It makes a revolution in every three minutes, and presents, alternately, a brilliant and a *red* light. The utility of this light is too obvious to require comment.

At two miles W. by S. from *Raza* is another isle, more elevated, appearing exactly like a haycock, and called *Redonda*, or Round Island.

These isles are very useful marks to vessels bound to the harbour; for a vessel bound to Rio Janeiro should, after rounding Cape Frio, steer due West, keeping about three leagues from the coast, until she makes *Redonda*, and which will be described before *Raza* can be seen, although the latter lies two miles more to the eastward. CURRENTS, at times, set along the coast, either East or West, according to the winds, and thus retard or facilitate the ship's progress.



THE FOLLOWING DESCRIPTION of the land between Cape Frio and Rio Janeiro is from Mr. Luccock.

The first land generally seen, on advancing toward Rio Janeiro from the eastward, is Cape Frio, giving its name to the adjoining district. Without the cape, on the North, is the Bay of Papagayos, which exhibits a fair specimen of Brazilian scenery.

From *Cape Frio*, westward, a stranger, having no vessel under his care, would proceed most pleasantly along shore, until the *Ilha Pay*, or *Paya* Isle, is brought on with the Sugarloaf on the western side of the Rio Janeiro. This would give him an opportunity of seeing every inlet on the coast; some of which, bordered by lofty masses of naked granite, are very beautiful. It would place before him, almost in a line, the *Corcovado*, *Gavia*, *Two Brothers*, and other mountains of singular form, uncouth names, and stupendous altitude. During the morning fogs, which hover about the shore, some of these raise their heads high above the mists, and serve as guides to the port: the *Gavia* is the most to the West, of the greatest height, and has a remarkable flat top, which seems an immense cube, or table of stone, with perpendicular sides, placed upon a mountain. The *Corcovado*, a little more to the eastward, is a lofty point of rock, which appears to pierce the heavens.

\* To this current may be mainly attributable the melancholy catastrophe of H.M.S. *Thetis*.—ED.

† Major Rennell's "*Investigation of the Currents*," pages 137, 8.

Steering for this, when far out at sea, brings a vessel near to the Sugarloaf, a much lower and conical mountain, with its steepest side to the West. Close to the foot of this rock lies the passage into the harbour.

"While rounding the Isle Pay, or Paya, the entrance is not visible; but, in proportion as the Sugarloaf draws to the northward of the ship, the gorge opens, and through it is beheld the calm expanse of what is generally deemed the finest bay in the world. The entrance is about a mile wide, and fenced on either side by solid masses of granite, one entire stone without a chink; that on the West is nearly 600 feet high, commonly estimated at much more; its neighbour, on the other side, rears its head to a somewhat greater elevation, and is topped with a signal staff, from which the first notice is given to the city of approaching vessels. Both hills are very abrupt, and skirted with forts, the advance of which is defended on both sides by strong double curtains. Immediately in front, and a little within the narrowest part of the entrance, is the battery of the *Lagé*, or *Lagea*, a low square fort, situated upon a mass of naked rocks, against which the water breaks with violence, and, in stormy weather, sometimes overtops the battlements, reducing the garrison to great distress and some danger. The fort of Santa Cruz, on the right hand, is very respectable; but the guns are placed too high, and the water is deep close to the rock, so that small vessels may render them perfectly useless.

"New beauties unfold themselves on proceeding into and up the harbour. At the mouth is frequently a very heavy and sometimes dangerous swell. Foreign ships formerly were obliged to anchor there, in 17 fathoms of water, with a sharp, rocky, and irregular bottom."

The *Baron Roussin* says, the mountain called *La Gavia* is situate about three leagues W. by S. from the entrance of Rio. It is seen from all points of the offing between the East and S.S.W. Its top appears to be flat, and rather larger at its summit than a little way below, which gives it the appearance of a ship's top: hence it cannot be mistaken for any other mountain, and it is the best object for distinguishing this coast. It is situate in latitude  $22^{\circ} 59'$ , and longitude [corrected]  $43^{\circ} 13'$ . Hereabout the variation of the compass, in 1819, was  $3^{\circ} 43'$  E.

At about 8 miles N.E. by E. from the Gavia is the *Paó de Açucar*, [Sugarloaf,] the conical mountain of rock on the western side of the entrance to Rio Janeiro. This rock has been generally considered as the beacon which serves to mark that entrance; but, being much lower than the Gavia, it is not seen at so great a distance.\*

It is prudent, in general, to keep at some distance from the coast which connects Rio Janeiro with Cape Frio; because, when the wind blows from S.W. to E.S.E. by the South, the swell is incessant, and in rough weather it renders the anchorage very unsafe. You should not approach the islands situate at the entrance of Rio until the sea breeze is well set in; and then you must manage to reach an anchorage before night. Without this precaution you will be exposed by stopping among the islands or at the entrance during the calm which intervenes between the sea and land breezes; or encounter the latter, which directly opposes the entry, and is very often accompanied by gusts of wind, which are sometimes violent, more especially at the full and change of the moon.

If, notwithstanding all precautions, the land breeze should set in before you have entered the harbour, and your vessel sails badly, or if the current, which almost always sets outward, will not allow you to reach the inside of the bay by tacking, it will then be more advantageous to remain outside of the islands than to anchor among them. The space for tacking is very limited, especially during the night; the ground is hard, and the swell of the sea is the stronger and more troublesome the nearer you are to the entrance. The strongest gusts of wind from the land breezes seldom extend farther out than to Redonda, or Round Island.

**HAILE SHOAL.**—The following desultory notice of a shoal lying off the mouth of Rio Janeiro we quote from the *Nautical Magazine*, May, 1846:—"The ship I was in passed directly over a shoal, the position of which I do not see marked on any chart, bearing off Sugarloaf N.  $7^{\circ}$  E. true, distance about 24 miles, extent about 200 yards in diameter. Bottom, sand and rock. There were no soundings taken, but I should think there cannot be

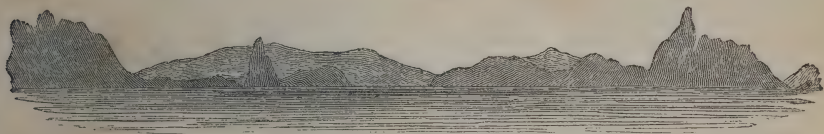
\* Captain Beechey, in H.M.S. *Blossom*, on his way to the Pacific Ocean, reached Rio Janeiro on the 11th of July, 1825, and here he remained until the 13th of August. During their stay the officers measured the height of the *Peak of Corcovado*, which was found to be 2,306 feet above the level of the sea; that of the *Sugarloaf*, 1,292 feet.



less than 8 fathoms over it.—*J. C. Haile.*" We have placed it on the chart, marked doubtful as to situation, &c.

On ENTERING and LEAVING the HARBOUR.—The passage generally preferred, on entering and leaving the harbour, is that between the isles Paya and Raza. The first lies at  $4\frac{1}{2}$  miles S.E. by E. from the Sugarloaf, and the latter 7 miles S.  $\frac{1}{2}$  E. from the same. The isles are steep-to, and you may pass close to either. In the channel between are from 21 to 11 fathoms, bottom of gray sand.\*

Should you enter at a mile to the West of Raza, or midway between Raza and Redonda, you will have the western point of Paya nearly N.E., and a direct course thence N.  $\frac{1}{2}$  E.  $7\frac{1}{2}$  miles will carry you to the West of the fortress of *Santa Cruz*, which stands on the eastern side of the entrance. On this track you leave, at a distance to the West, several islets and rocks, lying to the N. by W. of Redonda, and pass about half a mile to the East of the islet *Cantanduba*, or *Toucinhos*, lying near a mile to the South of the Sugarloaf. In this route the soundings decrease gradually from 24 to 7 fathoms, bottom of fine gray and white sand, stiff ground. There is no danger, and nothing to avoid but what may be seen.



*The Entrance to Rio Janeiro, bearing W.N.W.*

The least depth of water at the entrance of Rio is  $6\frac{1}{2}$  fathoms; having passed this the depths increase rapidly: in one cast of the lead you may have from 11 to 14 fathoms, very near to the battery of *Santa Cruz*. You may safely approach still nearer to the opposite side, but the first direction is the most followed, it having the treble advantage of leading a vessel near to the fortress, of answering the signals made therein, and of keeping clear of the little isle *Lagea*, with its fort, on the opposite side of the channel. Thus, also, you will avoid the effect of current, which sometimes runs to the N.W., when the tide is rising.

The passage between the fort of *Santa Cruz* and that of *Lagea* is the only one frequented: that between the latter and *Point St. João* is never used: not from want of depth, but because it is narrower, and exposed to shifting winds from about the Sugarloaf and other high lands. Here, also, the current is irregular, and the ground rocky.

From about three cables' length off *Fort Santa Cruz* the direct course to the anchorage for ships of war is N.  $32^{\circ}$  W. [*N.  $35^{\circ}$  W. true*] until you are E.N.E. of the fort of *Vilganhon*, which you pass safely at the distance of three cables. From this spot you will steer for the *Ilha dos Ratos*, or *Rat Island*, and, having now arrived before the city, you may choose your anchorage in from 19 to 10 fathoms, bottom of mud; only observing not to bring the Sugarloaf to the westward of *Fort Vilganhon*. The best place for ships of war is to the E.N.E. of the palace, to the South of an imaginary line from *Rat Island* to the principal church of the city: the bottom, in from 14 to 18 fathoms, is excellent. Here you will avoid a small rocky bank, lying at  $2\frac{1}{2}$  cables E.N.E. of *Rat Island*.

The *Isle Cobras*, or *Serpent's Isle*, is the fortified isle to the West of *Rat Island*. If from the flagstaff of *Fort Vilganhon* a line were drawn to the *Isle Cobras*, it would separate the depths proper for large vessels from those of 4 to 2 fathoms, which are frequented only by coasters and merchant vessels.

The anchorage for merchant ships is to the N.E., and adjoining to the city. The larger ones arrive at it by passing the *Isle Cobras*, and are separated from the *Men-of-War Road* by a shoal bank, on which the sea breaks at low water, spring tides, when the winds from the offing are violent.

Vessels commonly moor North and South in the Bay of Rio Janeiro; but it seems preferable to moor N.E. and S.W.: this direction, being nearly that of the flood and ebb, renders it easy to lay the vessel athwart the land and sea breezes, which are almost the only predominant winds. This will in summer be found necessary; for at that season the heat is, at times, almost insupportable. A hawser, carried alternately from one buoy to the

\* Between the islets *do Paya* and *da Maya* (the *Father* and the *Mother*) is a narrow but good channel of 11 fathoms, called the *Nereus Channel*, from the name of the ship commanded by the late venerated Captain *Peter Heywood*.—Ed.

other, according to the wind, will gain this advantage, so important for the salubrity of the vessel: the flood-anchor to be on the larboard, and that of the ebb on the starboard side.

The *land and sea breezes* ordinarily divide the 24 hours. The first begins in the evening, continues all night, and ends at about nine or ten o'clock in the morning. One hour of calm succeeds this, and generally at about 11 the sea breeze penetrates into the bay, and continues until sunset. The strength of these breezes is not uniform; and at times there are total interruptions; the calm, at times, will prevail for days together, or be varied momentarily by breezes without any fixed direction; but such circumstances are of rare occurrence.

The *Tides* are not regular, or of equal duration; as the ebb generally runs much longer than the flood, more especially after heavy rains. The ordinary velocity of each rarely exceeds seven-tenths of a mile in the hour; but at times it may run at the rate of a mile and three-tenths, principally during the ebb. The time of high water on the days of full and change is at three quarters past two, and the vertical rise  $4\frac{1}{2}$  feet: neaps only 3 feet.

The safety of the anchorage is nearly uniform, and is very rarely disturbed by winds causing serious accidents.

**LANDING PLACES, &c.**—There are many landing places at the keys before the town. Some are simply slopes or hardways, others have stairs. The convenience of their use depends on the state of the sea, which is seldom so agitated as to impede the communication between the shipping and the shore; but the filth of the town at these places renders the approaches at all times disagreeable.

*Vessels in the Road* generally take their water from a large fountain erected on the key of the *Place do Mar*, before the palace; but this water is not very wholesome, as it frequently causes dangerous colics, in the beginning of its use.

The *BAY*, or rather *GULF of RIO JANEIRO* is very spacious, and one of the most magnificent in the world. Its extent, in diameter, is from three to four leagues in several directions between mountains of majestic elevation, covered with the richest verdure, and terminating in an easy declivity, occupied by numerous villages, down to the sea. Plantations of all sorts, handsome country houses, surrounded with trees, many isles, woody and inhabited, ornament and diversify the surface and the coasts of this little inland sea; and there is not on the globe a more beautiful residence, or an aspect more imposing and agreeable.

The anchorages for large vessels do not extend far to the North of the parallel of the city; but all the bay is navigable for a multitude of small vessels or country boats, which form an animated scene.

From observations in the bay, the variation of the compass was  $3^{\circ} 40'$  E. in June, 1819.

A stay made in the Road, as in most roads subject to a high temperature, causes on the ship's bottom the adhesion of a great quantity of barnacles and other marine productions, which vegetate quickly, and soon cover over all the sheathing; these injure the copper and impede the velocity of the vessel; they must, therefore, be frequently cleaned off.

Fish are not abundant, owing to the number and motion of the vessels; and the consumption of those taken is not safe, in consequence of a great number of vessels being sheathed with copper. Shellfish, and oysters in particular, ought to be avoided.

On *LEAVING* the ROAD of Rio Janeiro the most simple precautions only are required: it will be sufficient merely to attend to the land breeze and the ebb tide, allowing them to carry you along: even the ebbing is not essential if the breeze has that strength which it usually acquires during certain hours daily.

To be better prepared for getting under weigh, vessels frequently, on the evening before their departure, get on the side of the bay which faces the town, by which they avoid any obstruction in the Road, properly so called; and some take advantage of the strength of the land breeze, but this is not really necessary, for a vessel may easily set out from any part of the usual anchorage.

The route for going out is the same as that for entering: passing at three cables' length to the East of the Isle Vilganhon, and at the same distance on the same side of Fort Lagea, and ranging within hail of the fortress of Santa Cruz, taking care in this tract to keep over to the eastern side rather than the other; these are the only requisite precautions.

As you generally weigh anchor in the morning, it is probable that you will have the advantage of the land breeze at least for four hours; this will enable you to pass all the isles in the bay; and, having arrived here, you may tack according to circumstances. Should you

experience a calm, between the land and sea breezes, before you get without the islands, it will be proper to anchor, choosing a favourable position, so as to get under weigh again with the first breeze that ensues.

Rio Janeiro, the capital and seat of the Brazilian government, is a large and fine city, of which the population, in 1819, amounted to 120,000 persons. It possesses, in abundance, all the resources which mariners can require. Vessels may here be careened, re-masted, and furnished with all things requisite; but all is expensive, and repairs are very dear, on account of the high price of the materials of workmanship. Provisions, though plentiful, are not cheap, cattle excepted; and the flesh of these is not only of indifferent quality and flavour, but frequently unwholesome; a disadvantage common in hot climates, and, in particular, on the greater part of the Brazilian coast.

CAPTAIN HEWETT'S DESCRIPTION AND DIRECTIONS are as follow: "The immediate entrance of the harbour of Rio is known by two lofty peaks, one on either side; the western resembles a sugarloaf: it bears that name, and *differs from every other on the coast*, (for there are many,) by the inclination of its summit to the *westward*.

"If night be too far advanced, a preference ought to be given to remaining under weigh, rather than to anchoring without the harbour, the ground being rocky, and much exposed to a heavy rolling swell, which increases as it approaches the bar, the shoalest water on which is but  $6\frac{1}{2}$  fathoms. The certainty of the sea breeze before noon of the following day, and the tempestuous and general violence of the land breeze, accompanied by heavy rain, &c., particularly at the full and change of the moon, renders necessary the precaution of standing off and on from and to Round Island; for to it the violence of the squall seldom extends.

"The FLOOD TIDE in the HARBOUR is of shorter duration, and of less force than the ebb, against which and a strong land breeze our ship, the Inconstant, *turned in*, to the astonishment of the Portuguese: an effort never before attempted. After violent rains the rise of the water in the harbour has very little influence over the ebb tide, except diminishing its strength. The ebb has been known to run a whole day without intermission; the current strongest on the western side; but an eddy flood will sometimes be visible on the eastern side, when the water is discovered to rise.

"The ENTRANCE of the HARBOUR, between the FORTS SANTA CRUZ and ST. JOAÕ, is, in breadth, three-quarters of a mile. The passage between St. Joaõ and *Legea*, or *Square Island*, situated immediately in the entrance, should never be attempted, although the greatest depth of water is to be found there; the narrowness of the channel, the likelihood of the wind's becoming variable under the Sugarloaf, the irregularity of the tide, with the rockiness of the bottom, if compelled to anchor, render it dangerous, if not impracticable. The true channel is on the eastern side of *Legea* island, to abreast of which, from the bar, the water gradually deepens from  $6\frac{1}{2}$  to 21 fathoms; and, when a little past it, the ship's head being N.N.W., soundings are lost for a short time, with the common headline.

"*Leaving Fort do Vilganhon* (also on an island) on the left hand, the best anchorage is obtained for *vessels of war* abreast the city, with the flagstaff of Vilganhon just open to the westward of the Sugarloaf. By taking this precaution, a small bank, very dangerous for cables, will be avoided. This bank is situated about  $2\frac{1}{2}$  cables' length from *Ilha dos Ratos*, or Rats' island, in an E.N.E. direction: it is circular, about a cable's length in diameter, and very rocky; the mark for  $4\frac{1}{2}$  fathoms, which is the shoalest water, is *Ilha dos Ratos* and the Great Church in one, and Vilganhon flagstaff on with *Theodosia* battery, on Point S. Joaõ: so that its vicinity to *Ilha dos Ratos* renders precaution necessary in mooring. The best bower, with a good cable, should be laid down to the westward, in order to preserve an open hawse to the entrance; a stream-cable bent on to the small bower anchor, and taken in at the stern port, will preserve a free circulation both from the sea and land breezes, and the ship's head will thus be directed to the only points of the compass from which the wind can be expected to blow fresh, and which are from N.N.W. to S.W.

"MERCHANTS' ROAD.—*A bar of sand*, with some rocks, extends opposite to the city, the outer edge nearly in a direct line from Vilganhon to *Ilha dos Ratos*, and ending at the N.E. point of *Ilha dos Cobras*; this bar is passable for boats only; but within it all merchant vessels, that there is room for, discharge and take in their cargoes: the only passage to it is around the North end of *Cobras*, near which are the arsenal and Brazilian vessels of war."

DIRECTIONS BY ANOTHER OFFICER.—"In entering the harbour take care to pass within hail of Fort Santa Cruz, in order to answer any questions that may be asked. There is plenty of water close to the rocks. Then proceed up to Fort do Vilganhon; below or



opposite to which bring-to, or come to anchor, and allow no boats to come alongside but those of the government, until you have received *pratique*, when you will be permitted to proceed higher up the harbour, round the East end of the Isle Cobras, to the place of anchorage for merchant ships.

"There are no pilots to be met with off the coast or harbour; for, as there is no hidden danger, they are not requisite. Whilst the sea breeze is strong enough to enable ships to overcome the ebb, they may safely enter by night or by day. But on entering at night the Fort Santa Cruz makes a signal to the city,\* which is not to be understood as interfering with the vessel entering.

"The port regulations require all vessels to bring-to a little below Fort do Vilganhon; and any one attempting to pass before she has been visited will be fired at, and the commander liable to imprisonment, besides paying a fine for each gun so fired.

"Besides the lighthouse erected on the Isle Raza, a small light is put up every night in the fort of Santa Cruz. It has been noticed that the time of high water is at 2 h. 30 m. *p.m.*, but it seems very uncertain."

DIRECTIONS for RIO JANEIRO, for vessels approaching from the *southward*; by the BARON ROUSSIN.

The approach to Rio Janeiro is *generally*, as we have shown, by Cape Frio, which is admitted to be correct during the northerly monsoon, and when advancing from the northward or eastward: but, under other circumstances, it will be disadvantageous, by losing time and prolonging the voyage.

For vessels from the southward, and during the southern monsoon, the *Ilha Grande*, the *Morro of Marambaya*, and above all the *Gavia*, in the West, are the best objects of recognisance; as all these may be seen at a sufficient distance to serve as a guidance on the route, and an estimate of the distance to the anchorage.

On advancing, another good indication is the peculiar figure of the land, between the *Gavia* and Sugarloaf. When coming in from the offing, between the E.S.E. and S.W., the configuration of their summits presents, in a very remarkable manner, the figure of a man lying on his back from W.S.W. to E.N.E.; whereof the *Gavia* forms the head, and the Sugarloaf the feet. When the tops of these mountains are free from clouds or mists it is almost impossible not to be struck with this appearance.

The *Gavia*, as already noticed, is situated at about three leagues W. by S. from the entrance to Rio Janeiro. Its summit appears flat, and rather larger than the surface below it, and which gives it the appearance of a ship's top. This mountain and the Sugarloaf, at 8 miles to the eastward of it, have been described in page 152.

On approaching Rio Janeiro from the southward soundings may be obtained at a considerable distance from the land, but at a great depth. At 10 to 15 leagues off they vary from 60 to 80 fathoms, and diminish gradually to the coast; the bottom is a mixture of sand, gravel, broken shells, rocks, and oaze or mud.

### *General Remarks on Rio Janeiro, by Captain J. W. Monteath, 1824.*

"Feb. 29, 1824.—During the night the breeze continued fresh from the N.E.; at sunrise the high land of Brasil, to the westward of Cape Frio, was in sight, bearing W.N.W.; at this time Cape Frio, although the nearest land, was not visible, being completely enveloped in clouds: these, however, soon cleared away, and the cape was seen, bearing N.N.E.  $\frac{1}{2}$  E., distant 20 miles. The wind here veered more to the northward; we, therefore, hauled in for the land to the distance of two leagues. At 10, bore up, on a W.  $\frac{1}{2}$  N. course, the entrance of Rio de Janeiro (which is easily distinguished by the *Gavia* and *Corcovado Mountains* on the western land) bearing W.  $\frac{1}{2}$  N., distant about 10 leagues; the latitude, by observation, being 23° 7' S.

"March 1.—The wind was light from the eastward: at 2 *p.m.* we passed the Marica islands at the distance of two miles. At this time the island Redonda was in sight, and presented, owing to the state of the atmosphere and refraction, a most singular appearance; that of a wine glass inverted.

"Between the Marica islands and the shore there is anchorage, at least for small vessels, as I saw a number of coasting vessels at anchor behind them; in going in they passed round

\* In 1820, of two guns and two lights.

a reef, which extends considerably East of them, and bore up for the anchorage, which is on the N.W. side of the islands.

"At 5 p.m. we entered the channel between the islands Paya and Raza. At 7, we rounded the islands Paya and Maya, (which lie to the S.E. of the entrance of the harbour,) at the distance of half a mile. The sea breeze now died away, and the wind became light and baffling; we, however, kept under weigh, in expectation of passing the fort, with the assistance of the flood tide, but were disappointed, as the ebb tide ran strong all night, and also the two succeeding days. At 2 a.m. came to anchor with the kedge, the weather calm, and the tide setting strong to the S.W. I should recommend, if the weather appears settled, to come to anchor at once, when the sea breeze falls off, in preference to keeping under weigh among the islands, as I found that the anchorage is tolerably good, and the depth of water from 10 to 14 fathoms. If the vessel has a chain cable, I would come-to with it in preference.

"At sunrise a breeze sprung up from the S.W.; weighed and made all sail; but, notwithstanding we had a fresh breeze outside, we could not get past the Sugarloaf, the high land intercepting the breeze; and it was not till 9 a.m., when the regular sea breeze set in, that we were enabled to pass Fort Santa Cruz. At 9 h. 30 m. we were boarded by an officer from Fort Vilganhon, who ordered us over to the other side of the harbour until the visit was paid.

"Owing to the disturbed state of the country, no person is allowed to leave the vessel until visited by the officers of police, as well as by the health-visit. The former was not received until next day. Passports are required, and strictly examined. The commanders of vessels, as well as passengers, are subjected to great inconvenience, being obliged to walk with the guard to the superintendent of police's office, a distance of two miles from the landing place, and afterwards to the judge of police's house, about a mile farther, to be presented. This, I can vouch for, is no easy task; especially in the middle of the day, the heat then being very oppressive.

"It is surprising to what an extent bribery is carried on by the officers of government, especially of customs. No business can hardly be transacted without a fee. These, during a vessel's stay, become very expensive, and form a prominent item in the charges of the port.

"On receiving the different visits, the vessel is allowed to proceed above Fort Vilganhon. By a late regulation, if you do not intend to discharge all your cargo, you must come to anchor in the outer Road, below Rat island; if otherwise, you must proceed to the northward of, but not to the westward of, the Isle Cobras, where you must remain until you have been visited, and have received a certificate of discharge. You will then shift the vessel to the westward of the channel, between Cobras Isle and the city, where you remain until you have completed its lading."\*

## DESCRIPTION OF THE INTERIOR OF RIO JANEIRO, ETC.

Lieutenant Shillibeer, R.M., who published, in 1817, a very curious and interesting volume, describing the voyage of the *Briton* frigate to the Pacific Ocean, has in that work included a description of this harbour; and he says that the entrance, being narrow, and well fortified by nature, could easily be rendered impregnable. The fort of Santa Cruz may be considered as the principal fortification. The battery at the foot of the Sugarloaf hill is of considerable extent, but so neglected, like several others alongshore, as to be nearly useless. The city, he adds, derives but little protection from its immediate fortifications; and the Island Cobras, notwithstanding its contiguity, is but little calculated to render it any.

There are wharfs and stairs for the purpose of landing at, but the most convenient is at the great square. The palace here was originally the mansion of a merchant: it is extensive, and has nothing particularly magnificent in its appearance to indicate its being the royal residence. At the bottom of this square is a very good fountain, which is supplied with water from the adjacent mountains, and conveyed from some distance by means of an aqueduct. The water is not good, and, on first using it, causes a swelling, accompanied with a pain in the abdomen. Ships may be supplied with considerable expedition.

It is almost impossible for a person, possessing the least reflection, to pass this spot

\* The Port and Commercial Regulations, Tonnage Duties of the Brazilian ports and Rio Janeiro, will be found in the Appendix.

without being struck by the contrast which must, necessarily, present itself to him. On the one hand, he may contemplate the palace of a prince, surrounded by courtiers and wallowing in luxury; on the other, slavery, in its most horrible state.

Leaving the square, you enter a street of considerable length and width, in which the customhouse, the residence of the British consul, &c., are situated.

The houses are generally well built, some of the streets are good, but all exceedingly filthy. The shops are well supplied with British as well as all other wares; and, whether the vender be English or Portuguese, he is equally unconscionable in his demand. Most of the streets are designated by the trades which are exercised by those who occupy them: as, in Shoe-street, you find shoemakers; in Tin-street, tinmen; in Gold-street, goldsmiths, lapidaries, &c. Gold-street is the most attractive, and is generally the resort of strangers, who are anxious to supply themselves with jewellery or precious stones, natural to the country: but it is not always that they are fortunate enough to succeed in obtaining them genuine; for, since the city has become the royal residence, it has attracted a host of English, Irish, and Scottish adventurers, and the Portuguese are apt scholars in knavery; so that, from any of them, you are now very likely to acquire a bit of paste instead of a diamond. The inns, though better than in many places, can boast of no excellence.

This city contains a considerable number of churches, but they are by no means splendid: and, excepting the chapel royal, which is adjoining the palace, there is little worthy of notice. The theatre and opera are attached also to the palace, but possess no particular elegance. The market is well supplied with every article, and is in so eligible a situation, that, with a comparatively small portion of trouble, it might be kept in fine order; but the people are idolaters to filthiness, and not less slaves to it than to superstition.

The trade of this port is very considerable, and from various countries. There is a Chinese warehouse of great extent; and, at certain periods, articles from China may be procured at a low rate. The cultivation of the tea-plant has been attempted, but unsuccessfully.

The country, for a considerable distance around, is peculiarly beautiful: the mountains high and woody: the valleys perfect gardens. The most delicious fruits are abundant. The quantity of oranges exhibited for sale, in the orange market, is astonishing. The same tree often exhibits, at once, the blossoms, the fruit in its primitive state, some half ripe, and the rest fully so, or fit for use. The pineapple is here in great perfection. In the neighbourhood are several botanical gardens, belonging, chiefly, to private individuals, and containing many plants rarely to be met with in England.

The harbour of Rio Janeiro is spacious; and, were the heat less oppressive, it might be esteemed as one of the most desirable in the world. There is a breeze from the sea generally about noon, which cools the atmosphere and renders it endurable.

Notwithstanding that the entrance is so narrow, the harbour increases to the width of three or four leagues, and in this gulf or basin are numerous small islands, some of them containing villages, others gentlemen's seats only. The greater part is shallow; so that, at a small distance above the island containing the British Hospital, it is not sufficiently deep for a vessel of any burthen to pass: but great trade is carried on by means of large boats. The whole of the islands in the gulf are very picturesque.

The DISTRICT of BRAGANZA, situated immediately opposite to the city of Rio, or St. Sebastian, is also very fine. It contains the small town of Braganza and a few villages along the coast. Sir Sydney Smith had here an estate of considerable extent, which was presented to him by the King of Portugal, in compliment for his services to the royal family and court.\*

The British frigate *Alceste* visited this port on her passage to China; and in the journal of her voyage† we find the following animated description of Rio Janeiro.

“An opening between two extremes of land marks the entrance of the harbour; and here, on the right, is the Fort of Santa Cruz, and, on the left, that of St. Joaõ. The ranges present in some places conical summits; and, although one has especially obtained the appellation of *Sugarloaf*, it is rather from its superior precipitous height, than from being singular in its shape. At this distance the beauty of the scenery is derived principally from the extent and impressive variety of the forms assumed by the different ranges.

\* The present Emperor of Brasil was declared of age, and assumed the government, July 23rd, 1840.

† Journal of Proceedings of the late Embassy to China, by Henry Ellis, Esq. London, 1818.



Mountains, whose relative distances are marked by the position of the clouds resting upon their summits, form the back ground. Mr. Ellis says, on approaching nearer to the entrance, the scene became indescribably sublime and beautiful; the mountains that had formed the amphitheatre, on a nearer view, divided themselves into islands and separate headlands; several were thickly, though, perhaps, not loftily wooded. Fortifications, detached houses, villages, and convents, occupied different positions; the eye wandered in rapturous observation over an endless variety of picturesque combinations, presenting a totality of wondrous scenery, the general effect of which must equally defy pictorial and verbal description.

"*St. Sebastian*, or the city of Rio Janeiro, when viewed from the church of the same name, appears to be built in a semi-circle; the streets are generally at right-angles. The public buildings are neither numerous, nor deserving of notice in point of architecture. The population is estimated at 120,000 souls, two-thirds of which are slaves, and the remainder consists of Europeans and mulattoes. The agricultural and other severe labour is almost entirely performed by slaves; for, until very lately, not only Europeans, but mulattoes considered themselves degraded by such employments. The mechanics were formerly all mulattoes; at present, however, the residence of the court has encouraged not only Portuguese, but other Europeans, to establish themselves as artificers.

"Thirty or forty English mercantile houses are established at *St. Sebastian*, and the export trade is almost entirely in their hands: their imports consist in English manufacture, and all the produce of Europe which can be required in Brasil: their exports from *St. Sebastian* are sugar, coffee, and hides; the cotton of Pernambuco being so superior, that but little of this commodity is grown in the neighbourhood. Rio coffee holds the third rank in the European market. Brazilian merchants are the growers of the raw produce, which is conveyed by them to the port, where it is sold to the English exporter. The customs at the port of *St. Sebastian* are stated to amount to £2,000,000 per annum."

In the relation of the voyage of *Capt. Wm. F. Owen*, in 1822, it is again stated, the country around Rio presents not only the most varied and majestic scenery, but is entirely a garden of nature; every spot, even of the soilless rock, being covered with beautiful flowers.

"On entering the harbour," says Mr. Forbes, the lamented botanist, "the mind is at once struck with its magnificence and beauty. The vast expanse of water bordered with bright green, the numerous inlets and islands, the rich verdure of the hills, studded with villas, and the lofty chain of mountains, form a dark and distant background, and make, altogether, a picture more like the poet's fancy than a reality of earth."\*

The land here is rich and well cultivated, and the oranges are perhaps the finest in the world. There is a peculiarity in the formation of these not generally known; it consists in the part where the seeds are formed being removed near the crown, and in some instances outside the pulp, but beneath the rind, giving it, upon the peel being removed, the appearance of two oranges. The part containing the seed is a kind of excrescence into which is drawn all the objectionable portion of the fruit, leaving the legitimate production free from every impurity, and rendering it the most delicious in its kind. (See upon this subject, page 131.)

*Bota Fogo*, about 3 miles from the city, in a southerly direction, is one of those beautiful inlets of which there are so many in the harbour of Rio Janeiro, and is the residence of many of the principal families, particularly the English merchants, who all have villas, either in the neighbourhood of *Bota Fogo* or *Gloria*. The scenery is extremely fine, commanding a view of the mouth of the harbour. Before vessels cross the bar they are seen by the inhabitants of *Bota Fogo* or *Gloria*, and again when they get inside the harbour, after passing the Sugarloaf and the three forts that command the entrance.

The aqueduct, or covered watercourse, that supplies the city, is a pleasant walk, and commands many fine and extensive views.

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## VI.—RIO JANEIRO TO SANTOS.

**MARAMBAYA ISLAND**, which begins at 9 leagues to the westward of the entrance of Rio de Janeiro, is 20 miles in length, and forms the large *Gulf of Marambaya*, which

\* A description of the town and environs is given in the narrative of Captain Owen's Voyage, Vol. I. p. 38.

abounds in fish. Of this gulf the general depths within are 3 and 4 fathoms. It is bounded on one side by the main land, and on the other by the *Restinga* or Island. The latter is a narrow bank of sand, about 20 feet above the level of the sea. In most parts, especially near the middle, it is quite bare, in others it is covered with various creeping plants, which keep the soil together; it exhibits on its summit a little brushwood, and at its northern extremity some mangrove. Toward the sea it is steep, and the surf breaks against it with violence; toward the bay it is level and smooth. The latter portion abounds with shellfish and sand-larks; the herbage shelters many armadilloes; and deer, with other animals of chase, present themselves to the sportsman.

MARAMBAYA, at the western end of this sandy track, is a single bold mountain, about 700 feet high. It has a church, and some good springs. The inhabitants subsist by fishing, and the produce of the few fields which they cultivate, without having much to spare.

Immediately off the East end of the Praya de Marambaya is the great point of *Guaratiba*, at which begins the range of mountains that surround the Gulf of Rio Janeiro. From this point, in clear weather, at  $7\frac{1}{2}$  leagues to the East, may be clearly seen the isle *Redonda*, off the entrance, and the steep shores, in streaks of white and dark green, which terminate the coast. You may equally see, at about 6 leagues to the E.N.E., the *Gavia*, the mountain which, from its remarkable form, cannot be mistaken for any other, and which is the surest indication of Rio Janeiro, on approaching from the southward. On proceeding thence toward Rio, no particular caution is required, and having come up nearly to Redonda, you may shape a course, according to the wind, between it and the neighbouring islets: recollecting only, before entering, that it is requisite to have a wind which will carry you in before night: such wind commences about noon, the time of day when the breeze sets in from the offing, almost always with sufficient force.

The eastern point of Marambaya Island is separated from the main land by a small opening, through which boats only can enter into the gulf.

As the land of Marambaya is low, it should in thick weather be approached with caution. Circumspection is the more necessary, as a *Lagé*, or flat rock, surrounded by shoal ground, lies at 3 miles from shore, nearly off the middle of the isle, which should not, therefore, be approached nearer than to 4 miles, or in 22 to 30 fathoms of water, bottom of sand and gravel.\*

M. Roussin, both in his Chart and Directory, describes the Gulfs of Marambaya and Gairosu under the general name of *Baie de Ilha Grande*, which he describes as having two entrances; the one to the East formed by the Ilha Grande, and promontory or beach of Marambaya, and the other by the same isle and Punta Joatinga. Both entrances have sufficient water for the largest ships. Entire fleets may enter and find shelter from all winds. The soundings vary from 27 to 6 fathoms, in great part of the surface: and, on several parts of the interior coast, wood and water may easily be obtained.

#### POSITIONS OF THE PRINCIPAL POINTS, ETC.

	Latitude S.	Longitude W.
Lagé de Marambaya; a flat rock . . . . .	23° 7' 47"	43° 51' 57"
Morro of Marambaya; summit (700 feet) . . . . .	23 5 9	44 2 58
Isle of Jorge Grego; S.W. point . . . . .	23 15 11	44 14 6
O Papagaio; summit of the large isle . . . . .	23 10 55	44 15 47
Point Acaya on Ilha Grande . . . . .	23 15 12	44 24 52
Point Joatinga; summit of the islet . . . . .	23 18 30	44 3 26
Hill of Cairoçu; eastern summit . . . . .	23 20 2	44 37 43
Peak of Parati; summit . . . . .	23 19 28	44 48 28
Isles Couves; the largest . . . . .	23 25 54	44 52 18
Ponta Grossa . . . . .	23 28 15	45 1 44
Isle Vittoria; summit . . . . .	23 47 42	45 48 14
Busios Isles; the S.E. isle . . . . .	23 44 27	45 0 28
Ilhas dos Porcos; southern hillock . . . . .	23 33 38	45 4 42
Islet Mar-Virado; summit . . . . .	23 34 7	45 8 44

\* As *Lagé* means a flagstone, and is a generic name given by the Portuguese to flat rocks, but little above the surface of the water, we presume that the 18 feet on this rock, as denoted in a late chart, must signify 18 feet high above the level of the sea.

	Latitude S.	Longitude W.
Ponta das Ostres; extremity	23° 34' 52"	45° 11' 48"
VILLA BELLA DE PRINCESA; the steeple	23 46 52	45 21 21
—; roadstead	23 47 26	45 22 21
Point Pirasonungo, on St. Sebastian's	23 57 32	45 14 57
Point Seputuba, on the same	22 56 3	45 24 31
Montão de Trigo, or the Corn-stack	23 51 4	45 46 26
Alcatrasses; the largest	24 6 5	45 41 11
SANTOS; the arsenal	23 55 51	46 19 49
—; summit of the Moela	24 3 6	46 16 31
Point Taypu, at the entrance of Santos	24 1 11	46 24 59
Lagé de Santos	24 18 0	46 12 10
Redonda, or Little Queimada	24 21 26	46 49 11
Queimada Grande	24 28 21	46 41 14

The **ILHA GRANDE**, an island 5 leagues in length, separates the entrances of the extensive harbours of MARAMBAYA and GAIROSU, as shown on the chart. The interior land is high; and the greater part of the coast presents a double range of mountains. On leaving Illo, when bound this way, the mountain of Gavia serves as a guide to the westward. A sufficient offering must be given to the land after passing this point, as the current frequently sets strongly on the shore to the West.

The eastern end of the ILHA GRANDE lies at the distance of 47 miles from Point Gavia, and opposite to the bluff point of Marambaya Island. The channel between it and the latter is  $5\frac{1}{2}$  miles wide, and very safe for ships of any size, which may take shelter here. The soundings are from 15 to 9 and 7 fathoms. Fresh water may be obtained from the springs at the West end of Marambaya Island, and wood may be had from the other islands in the bay.

On the eastern side of the Ilha Granda is anchorage, in the several little bays named *Palmas*, *Albroo*, and *Eschella*, for ships of any burthen. The first of these, from the East, is Palmas Bay, and in this a ship may lie land-locked in from 6 to 8 fathoms. The other two are smaller, in both the depths are from 5 to 7 fathoms.

Within the *Restinga*, or *Isle of Marambaya*, the soundings eastward diminish from 8 to 3 and 2 fathoms. From the *Punta do Sena*, or N.W. extremity of the isle, a reef or tongue of sand extends nearly three miles N.N.W., or about two-thirds over the entrance, toward an islet called the *Gavia Grande*, which lies at the entrance of an opening near the North shore; so that the deep channel for ships is only one mile in breadth, and the course upward is between this isle and a group to the eastward, of which *Jaguano* is the chief. The best passage toward the eastern part of the gulf is made by keeping the main land on board, leaving the *Jaguano* group on the starboard side, and the two islands *Tacurucu* and *Madeira* on the larboard. There is anchorage at a mile and a half, S.E.  $\frac{1}{2}$  S. from the *river Taguai*, in 5 or 6 fathoms, muddy ground, with the island *Madeira* W.N.W.  $\frac{1}{2}$  W.,  $2\frac{1}{2}$  miles, *Tacurucu* W.S.W.  $\frac{1}{4}$  W., and *Mount Marambaya* S.W.

On sailing outward from this spot keep the main land on board, and pass between Tacuru and Fortada, or the N.E. isle of the Jaguano group. You may freely stand toward the Gavia Grande, but must be cautious in advancing toward the bank of Marambaya, proceeding in not less than 9 or 10 fathoms, as the edge of that bank is very steep.

ISLE of JORGE, or GEORGI GREGO.—At about two miles from the South side of Ilha Grande is the islet of *Georgi Grego*, which is bold-to; and, although sterile in appearance, it affords not only anchorage on its North side for large ships, but plenty of wood and water: and here, at a village named *Angra dos Reis*, refreshments may be obtained.

GAIROSU BAY.—The entrance to this place, between the Ilha Grande and Punta Joatinga, may be readily known by a remarkable inland hill to the northward, called the *Friar's Hood*: bring this hill to bear N. by E.  $\frac{1}{2}$  E., and steer toward it, until you are  $2\frac{1}{2}$  miles within the point of the island, when you may bring up and anchor. By keeping within this distance from the island on the East you will avoid a sunken rock, which lies nearly in the middle of the entrance. On coming in, numerous isles, inclosed within the bay, will be seen: and between those on the East is a passage into the Gulf of Marambaya. The principal village, *Villa Grande*, is on the N.E. shore. The situation of an islet



near Point Joatinga, on the West side of the entrance, is latitude  $23^{\circ} 18' 30''$ , longitude  $44^{\circ} 30' 10''$ .

*The Point of Joatinga*, and that of *Cairoçu*, which follows, at five miles more to the S.S.W. are high and steep, and may, therefore, be approached with safety. The points terminate the South part of the high lands which encompass the great bay of *Ilha Grande*, &c.

*The Porcos*, &c.—At 25 miles S.W. by W.  $\frac{1}{2}$  W. from Point *Cairoçu* is a group called the *Porcos*, or *Hog's Isles*, which comprehends one isle of moderate height, with three small islets, one on the South, the others to the N.E. Between the larger isle and the continent is a very fine channel, into which large vessels may enter and pass with perfect safety, but they should not venture in with a shifting wind. On several points of the coast within cattle and refreshments, with wood and water, may be obtained. One of the best roadsteads hereabout is in a cove of *Porcos*, with 8 and 9 fathoms of water, sheltered from all winds, excepting those from N.E. to E. by N., which seldom continue so long as to cause a heavy sea. Here the tide is scarcely perceptible. Opposite to the *Ilha de Porcos* is the *Bahia de Tubaroes*, or *Sharks' Road*, which has likewise good and clean ground, and is capable of admitting ships of burthen, but it is exposed to winds from the southward, which raise a heavy tumbling sea, dangerous to large vessels.

**St. SEBASTIAN, &c.**—The N.E. point of the Island of *San Sebastião*, or of *St. Sebastian*, is 13 miles S.W. by S. from *Porcos*, and there lie in the offing a group of three islets, called the *Busios*, and an island, *Vittoria*, nearer to *St. Sebastian*. The *Busios* lie at 11 miles S. by E. from *Porcos*, and at 6 miles W.  $31^{\circ}$  S. from these is the *Isle Vittoria*. The passage is clear for vessels of all dimensions between these several groups, and so is all the basin formed between the Island of *St. Sebastian* and the continent, with the exception that the channel between *St. Sebastian* and *Vittoria* is contracted by a reef extending 2 miles S.S.W. from the latter, and, therefore, vessels of more than a middling draught should not attempt it.

*The Island of St. Sebastian*, in its greatest extent, is about  $4\frac{1}{2}$  leagues in length, and its mountains are as elevated as those of the continent, from which it is separated by a gullet or strait. In clear weather this island may be seen at a distance of 15 leagues. Its shores are very steep: that of the South trends to the W.N.W. from the S.E. point of the isle. The eastern coast is, altogether, nearly in the direction of the meridian, and the isle is in form quadrilateral. The western coast, opposite to the continent, forms, with the latter, the gullet, and several deep bays, wherein there are excellent anchorages, bottom of oaze or mud, and depths of 7 to 22 fathoms.\*

Those who are bound to *St. Sebastian* have seldom occasion to land, at any time, either on the North or the South side of the island. What has been already said on the winds and currents off the coast, has shown what precautions are requisite on approaching. There are impediments which may not be expected; and the Baron Roussin has shown that, even in the month of June, which is the middle of what is called the southern Monsoon, having made the island from the South, he lost three days in tacking, in order to gain its North side; the winds being adverse and very fresh from the N.E., while the current was running to the South, at the rate of seven-tenths of a mile in the hour. The most prudent way seems, therefore to be, not to attempt the approach from the southward, unless the weather proves fair, when the land may be seen and known.

*Point Pirasonungo*, the S.E. point of the island, is situate in latitude  $20^{\circ} 57' 32''$ , and longitude [corrected]  $45^{\circ} 11' 40''$ .

The gullet or strait of *St. Sebastian* affords shelter and refreshments for the largest vessels. All should enter it from the northward, and keep near the island. Its general direction, halfway down, is S.S.W.  $\frac{1}{2}$  W., and thence more westerly. It is contracted by a bank extending from the continental coast on the West, for more than two-thirds of its length from N. to S. A particular plan of it is given on the chart, on reference to which it will be seen that, in the roadsteads, on the island side, the depths are from 15 to 18, and that the depths in the channel vary from 10 to 20 fathoms: the bottom of muddy and tenacious ground. The greatest breadth of the strait is at the North part, 3 miles; but two-thirds of this space is occupied by the bank on the West, over which the depths are from 5 feet to 3 fathoms.

\* In noticing this quality of ground, we may here observe that, on the coast of Brasil, the bottom of oaze, or soft mud, is almost always found near the high lands.—*Roussin*.

A roadstead more tranquil than that of St. Sebastian cannot be required ; it being so protected by the surrounding high lands that vessels lie in water as smooth as in a basin.

At this island cattle, poultry, arrack, and the other provisions of tropical climates, may be readily obtained, at a moderate price, either at the two principal establishments, or at the habitations of the country people, which are numerous, both on the island and the main. The fishery here is rarely productive, but the fish are of good quality.

The ancient town of St. Sebastian is on the continent, at the narrowest part of the strait. Since 1817, the Brasilians have projected a new town on the isle, toward the northern entrance, *Villa Bella de Princeza*. At 400 fathoms to the S.W. of this town is the best anchorage for ships of war, where there are 16 fathoms of water, bottom of gray sand.

There are several *watering places* at St. Sebastian, but the best is between the new town and the *armação*, or oil factory, situate near the N.W. point. The water is good, and easily obtained. On all the coast of the continent opposite firewood is abundant.

The *winds* at St. Sebastian almost always follow the direction of the gullet, night excepted, when the land breezes come alternately from different points, without any certain law. During the day the winds come mostly from the N.N.E. and S.S.W., following the line of the coasts ; they are frequently interrupted by intervals of calm.

The *currents* follow the same direction as the winds, and their velocity is proportioned to the force of the latter. The most ordinary rate in the gullet is seven-tenths of a mile in the hour, and of one and eight-tenths when augmented to their greatest strength.

The roadstead is situate in latitude  $23^{\circ} 47' 26''$ , longitude  $45^{\circ} 18' 30''$ .

It has been noticed that the lands of St. Sebastian, with those of the vicinity, are very high ; but they are well covered with wood to their summits, and present an agreeable aspect. The shores are steep, and you may anchor at a short distance from them on good ground. In general there are no dangers but what may be seen.

The South entrance of the gullet is not above a mile wide, but it will admit ships of war, and afford shelter during a S.E. gale. On a survey of the strait, by Mr. Warner, there appeared to be little or no regular set or rise and fall of the tide here ; but the current with northerly winds sets to the southward, and with southerly winds to the northward, as already described. There may, however, be a rise of 2 or 3 feet on the days of full and change, on which the time of high water has been estimated at 11 h.

ST. SEBASTIAN to SANTOS.—From the S.W. end of St. Sebastian an islet, *Moela*, near the entrance of the port of Santos, bears W. by S.  $15\frac{1}{2}$  leagues. In the great bay between, at 5 miles from shore, lies a high conical islet, woody to the summit, called *Montão de Trigo*, or the *Corn Stack*, in latitude  $23^{\circ} 51' 4''$ , longitude  $45^{\circ} 43' 10''$ . At 2 or 3 miles around it, and to the same distance from the coast in the vicinity, is an excellent muddy bottom, having over it from 11 to 22 fathoms of water.

The group called the *Alcatrasses*, or *Cormorant Isles*, lies at 16 miles S.S.E. [ $S. 17^{\circ} E.$ ] from the Monton de Trigo. This group is composed of several arid rocks, the largest of which may be seen at the distance of seven leagues ; it appears from the E.S.E. in the form under which painters represent a dolphin, whereof the head, connected with two small rocks, turns to W.S.W. Another rock, larger than the two last, lies at two miles to the W.N.W., and two or three others lie nearly at the same distance to the N.E. The pilots say that the bottom near these rocks is not clear, and that it is imprudent to approach them within 4 or 5 miles, unless the wind be fair. This precaution is the more requisite, as the currents from the gullet and eastern side of St. Sebastian at times affect the sea hereabout. The assigned position of the principal isle of the Alcatrasses is lat.  $24^{\circ} 6' 5''$ , long.  $45^{\circ} 38'$ . From the north-easternmost of these islets the *Point Seputuba*, or S.W. point of St. Sebastian's, bears N.E.  $\frac{3}{4}$  E. 15 miles ; and the entrance of the Port of Santos nearly West, 13 leagues.

**SANTOS.**—As a particular plan of this harbour is given on the chart of the coast, a prolix description is unnecessary. On reference it will be seen that the outer part is a circuitous bay, with a sandy beach, affording anchorage and shelter ; perfectly clear and safe. The port, formerly much used by the Portuguese fleets, has sunk into comparative insignificance, together with the other southern ports, since the rise of Rio Janeiro, Bahia, and Pernambuco. The harbour is formed, on the East, by the island of St. Amaro, a portion of land separated from the continent by a small river, the *Bertioga*, which falls into the sea in that direction, in the parallel of  $23^{\circ} 54' S.$  Through this river craft may still pass into the harbour of Santos.

The southern or chief entrance to the port of Santos admits large vessels, which may enter and be sheltered from all winds excepting those from S.S.W. to S.E. *Point Taypu*, on its western side, lies in lat.  $24^{\circ} 1' 11''$ , long.  $46^{\circ} 21' 43''$ . The opposite point, *Manduba*, lies nearly on the same parallel, at a mile to the N.W. of an islet named *Moela*, or the *Gizzard*, which may be approached with safety.\* On advancing into the bay, from the southward, you will have 10, 9, 8, and 7 fathoms of water, until near the bar, upon which there are only  $4\frac{1}{2}$  and 5 fathoms. The passage within is narrow, but the eastern side is the boldest, having deep water close to the shore. At six miles up the river, on the eastern shore, and above the second bar, is a fort, upon a perpendicular rock, near which is a depth of 18 fathoms. Having arrived to this place you will see the town of Santos to the West, on steering toward which, at two or three cables' length from shore, you will avoid the bank stretching from the North side; and, when nearly up to the town, you may anchor. The best spot is abreast of the town, in 7 fathoms, bottom of mud. Provisions are abundant here, and good water may be obtained by sending a boat about seven miles thence up the river.

To the south-westward, between the port of Santos and the village of Conceição, a distance of nine leagues, the shore is generally low; but a chain of high mountains extends within, which branch in different directions, and appear in the distant offing like islands. The chain is broken by the harbour of Santos, but continues to extend thence eastward to the gullet, or strait of St. Sebastian.

*Lagé or Rock of Conceição*.—At seven miles E.  $25^{\circ}$  S. [ $E. 31^{\circ}$  S.] from the village of Conceição stands an insulated rock, about 12 feet high above the sea, which appears to be a little larger than a man of war's launch, and at a little distance from it are 12 fathoms of water, bottom of soft sand. From this place the port of Santos may be distinctly seen, at seven leagues to the N.E.

The *Lagé or Rock of Santos*, otherwise called *Bird Isle*, is a block of smooth stone, about 6 feet above the sea. It lies in the latitude of  $21^{\circ} 18'$  at  $16\frac{1}{2}$  miles S.  $20^{\circ}$  E. from the islet *Moela*: between it and the port of Santos the depths are 15 to 18 fathoms, bottom of sand and mud, the usual quality of ground hereabout.

*Redonda, or Little Queimada*.—This is a small round islet, thickly wooded, and visible 20 miles off. It lies at the distance of 10 miles S.  $30^{\circ}$  W. from the *Lagé of Conceição*, in lat.  $24^{\circ} 21' 26''$ , long.  $46^{\circ} 46'$ .

The *Queimada Grande* is a large rock, nearly barren, lying at about 10 miles to the S.E. from *Redonda*, in latitude  $24^{\circ} 28' 21''$ . This islet has appeared in some charts under the name of *Ilha Redonda*, but this appears to be wrong; as it is described as long and narrow, extending about N.N.E. and S.S.W. nearly two miles, with a reef from its northern point. Its highest part, appearing of a round form, is to the S.W.†

## VII.—SANTOS TO THE RIO DE LA PLATA, INCLUSIVE.

HAVING described the Islets in the offing of Santos, we now proceed with the coast from Conceição southward.

*Conceição* is situate on a hillock near the shore, and at four miles from it there is anchoring ground with 9 to 11 fathoms of water.

The coast hence, a low sandy shore, trends to the S.W., 14 miles, to the creek, heights, and beach of *Pirubi*; thence follow, in succession, the islets and point of *Guaraha*, the little river *Una*, *Point Jurea*, the river *Iguape*, the entrance of the *Mar Pequeno de Iguape*, and the port of *Cananea*. The soundings along shore generally increase in depth according to the height of the lands; and there may be found, at from 3 to 10 miles off shore, 7 to 13 fathoms of water. You may anchor off any part of the shore, at two or three miles from the beach, on an excellent bottom, in from 5 to 9 fathoms; but, as there are no harbours for large vessels, there can be no motive for anchoring here, unless in a calm, when not exposed to danger.

\* A light is said to be kept by night on this islet. Particulars to us unknown.

† A Rock, stated to lie in  $25^{\circ} 41' 20''$  S. and about  $44^{\circ} 50'$  W., [corrected], was discovered on the 13th of February, 1811, by *Medeiros*, a Pilot of Bahia, who was for about a year along with Captain Roussin, and in whom Captain R. considered all confidence might safely be placed. It is marked doubtful on the chart; but, if it exists, it lies about S. by E. true, 35 leagues from the S.E. end of St. Sebastian's.



The entrance of the little river *Iguape* lies in the latitude of  $24^{\circ} 35\frac{1}{2}'$ , and the bar of the *Mar Pequeno* is about  $3\frac{1}{2}$  leagues to the S.W. of it, in lat.  $24^{\circ} 43'$ . By the *Mar Pequeno*, or *Little Sea*, is meant a natural canal, which extends in a parallel direction with the shore to the port of *Cananea*; and the beachy coast between is, therefore, that of an island; this is called the *Praya*, or *Beach of Iguape*. In proceeding along it a vessel should not advance nearer than two leagues, nor into less than 9 to 11 fathoms of water, sandy bottom.

The *Mar Pequeno de Iguape*, above mentioned, has a sufficient depth for large vessels, but its bar will admit boats only. The town is situate on the western bank, at 4 miles above the entrance. The *Praya* is a low sandy flat, the middle part excepted, and can be seen but a little way off. Its extent is ten leagues, and it consists mostly of sandy downs, interspersed with brushwood.

*Mount Cardoz* is the highest mountain on this part of the coast. Notwithstanding the shortness of the distance and the height of the chain of mountains of which *Mount Cardoz* constitutes a part, and predominates so remarkably, the fogs that prevail on this part of the coast, in the southern monsoon, obscure the land, and the coast should then be approached with great caution.

## POSITIONS OF THE PRINCIPAL POINTS, ETC.

	Latitude S.	Longitude W.
CANANEA; Islet Bom Abrigo . . . . .	$25^{\circ} 6' 49''$	$47^{\circ} 50' 35''$
Figueira Island; centre (160 feet) . . . . .	$25 21 29$	$48 2 34$
Isle do Mel; southern summit . . . . .	$25 32 43$	$48 18 39$
PARANAGUA; Fort on the Bar . . . . .	$25 30 14$	$48 18 54$
-----; West point of Cotinga Isle . . . . .	$25 29 50$	$48 28 34$
-----; Church of Sta. Antonina . . . . .	$25 25 42$	$48 39 0$
Coral Rocks; the largest . . . . .	$25 45 49$	$48 23 4$
Itacolomi Rocks; the largest . . . . .	$25 50 20$	$48 25 38$
Morro Caiuva . . . . .	$25 49 30$	$48 34 22$
Point João Diaz, on the S. side of the Rio S. Francisco . . . . .	$26 6 33$	$48 32 40$
Tamborete Isles; southern isle . . . . .	$26 20 54$	$48 31 44$
Isles Remedios; southern isle . . . . .	$26 29 28$	$48 34 43$
Point Itapacoruya; North side . . . . .	$26 47 18$	$48 37 5$
Mount Zimbo, on the continent . . . . .	$27 11 6$	$48 34 54$
Volage Bank; 14 fathoms . . . . .	$26 44 0$	$48 5 0$

## ISLE OF ST. CATHARINE, AND OPPOSITE COAST.

Arvoredo Isle; the summit . . . . .	$27 16 47$	$48 23 39$
The Fort Sta. Cruz d'Anhatomirim . . . . .	$27 25 32$	$48 33 58$
San Miguel; the church (on the continent) . . . . .	$27 27 15$	$48 35 14$
San Antonio; the church (on the island) . . . . .	$27 30 17$	$48 28 11$
TOWN of NOSSA SENHORA do DESTERRO . . . . .	$27 35 25$	$48 30 52$
San José; the church (on the continent) . . . . .	$27 36 18$	$48 35 2$
Le Ribeirão; the church (on the island) . . . . .	$27 42 18$	$48 32 11$
L'Anceada do Brito; the church . . . . .	$27 46 15$	$48 36 42$
The Isle dos Cardos . . . . .	$27 48 38$	$48 33 29$
South Fort, on the Isle of N.S. da Conceição . . . . .	$27 50 9$	$48 33 11$
Islet Badejo . . . . .	$27 26 6$	$48 19 12$
Isle Aranhas; the largest . . . . .	$27 29 42$	$48 19 48$
Isle Xavier . . . . .	$27 37 18$	$48 22 0$
Isle Campexe . . . . .	$27 42 12$	$48 26 30$
Moleques do Sul; the largest . . . . .	$27 49 49$	$48 24 10$
Isles Tres Irmaos, or Three Brothers; Eastern isle . . . . .	$27 50 10$	$48 27 45$
Point Catheta . . . . .	$27 35 34$	$48 23 36$
----- Grossa . . . . .	$27 48 18$	$48 28 12$
----- de Lagobina . . . . .	$27 46 18$	$48 28 12$
----- dos Frailes (Friars' Point) . . . . .	$27 50 0$	$48 32 12$
----- dos Naufragados . . . . .	$27 49 47$	$48 32 55$
----- Pinheira . . . . .	$27 53 8$	$48 39 13$

	Latitude S.	Longitude W.
Isle do Coral	27° 55' 10"	48° 30' 49"
Cape Guaratuba	28 6 12	48 36 28
— Cirui	27 59 12	48 35 46
— Uvidor	28 12 24	48 36 28
Islet Tocoromi	28 19 29	48 32 6
Point Viraquera	28 13 25	48 35 24
Isle das Araras	28 18 0	48 33 8
Point Bituba	28 16 5	48 35 6
Isle Lobos de la Laguna	28 24 36	48 41 40
Morro da Barra	28 29 18	48 46 28
Town of Laguna	28 28 23	48 47 0
Cape Sta. Marta Grande	28 39 0	48 43 32
Barra Velha	28 51 30	49 12 45
As Torres	29 28 0	49 56 20
Praya, or Beach of Pernambuco; eastern part	29 52 0	49 55 36
— of Destretto; eastern part	31 12 0	50 36 36
RIO GRANDE de S. Pedro; the tower	32 7 20	52 5 36
Bank of sand and shells; eastern part	33 44 0	52 28 14
Los Castillos; eastern rock	34 24 30	53 38 28

**CANANEA.**—An islet, Bom ABRIGO, in latitude 25° 6' 49", and long. 47° 49', distinguishes the entrance of the port of Cananea. It is very high, covered with trees, and vessels may anchor at a little distance from it to the eastward; a smaller islet lies on the South side of it, 2 miles to the eastward of which are 10 and 11 fathoms of water, over a bottom of sand. The common channel into the harbour is to the northward of Bom Abrigo, although obstructed by several shoals, but the southern channel is the deepest; and a vessel may venture into either with the assistance of a pilot. The bar may be found by means of Mount Cardoz, situate inland about 5 leagues to the W.N.W., and by the Praya de Iguape, which we have described. Within the harbour the Brasilians construct large vessels. The town is situate on the western side of the river, at 7 miles above the Ilha do Abrigo.

On proceeding southward from Bom Abrigo you will see, at the distance of 10 miles from that isle, an islet, *Castillo*, 32 feet high above the water, and nearly opposite to the mouth of a rivulet, *Arrapira*, no longer navigable. At 8½ miles beyond this, in the same direction, is another, *Figueira*, 160 feet high; both have obtained their names from their peculiar appearance; the first being less elevated than the latter, but seeming broader, with a ridge rising up in the middle, and at a distance resembling a castle. *Figueira* in shape resembles a fig; both are nearly barren, and bear from each other S. 28° W. and N. 28° E. (*by compass*). At the distance of a mile from each are from 13 to 9 fathoms, fine sandy ground.

**PARANAGUA.**—The *Isle do Mel*, or Honey Isle, marks the entrance of the gulf of Paranagua, which is surrounded by forests. This gulf, improperly called bay, is a break of the land in all directions, within a circuit of 5 leagues, and is the receptacle of waters from several brooks and rivulets. The entrance is sheltered and divided into two passages, by the isle above mentioned; this isle is low, and has several hummocks on it, which at some distance resemble islets. To the northward of it are three islets, named the *Palmas*. The southern passage, obstructed by breakers, is not navigable; the northern admits brigs, many of which are built in the gulf or basin. In entering by the northern passage you leave the *Palmas* on the starboard side; these may be known by the palm trees, with which they are covered; but here a pilot for the interior navigation is indispensable.

The water which issues from the gulf of Paranagua carries into the offing the alluvion of the country, which has sensibly reduced the depth, but there is nothing material to obstruct the navigation, and at 2 leagues from the entrances there is found from 5 to 8 fathoms of water, with bottom of gray sand and mud.

The summit of the southern hummock of the *Isle do Mel* is in latitude 25° 32' 43", longitude 48° 16'. Variation of the compass, 7° E.

The town of Paranagua is on the South side of the gulf, within the West end of an isle, *Colinga*,  $4\frac{1}{2}$  leagues from the entrance; and there is another town, the *Villa Antonina*, on the western inlet,  $2\frac{1}{2}$  leagues higher up.

**RIVER GUARATUBA.**—The bar of the river Guaratuba is 23 miles to the S.S.W. from the Isle do Mel, at the entrance of Paranagua. This bar lies at the southern extremity of a shallow bank, over which boats may pass, and which extends from the shore eastward to the distance of 3 to 8 miles. The bank begins at the southern pass of Paranagua, and on the edge of it, in lat.  $25^{\circ} 47'$ , is an islet, called *Ilha do Coral*, 64 feet high, and more to the southward two islets, called the *Itacolomis*, 21 feet in height, and lying in lat.  $25^{\circ} 50' 20''$ , and long.  $48^{\circ} 24'$ . You may approach them from the offing to one or two miles, where there may be found 9 to 11 fathoms of water, bottom of sand and mud. The stream of the Guaratuba is rapid, and the vicinity has been noted for its fisheries. Several small rivers run into it, the principal of which is said to be navigable for 12 leagues.

Between  $26^{\circ} 7'$  and  $26^{\circ} 24'$  S. is the island of *San Francisco*, which forms two branches of the river of the same name; the only considerable and important river hereabout. The country here, though rich, is swampy and unhealthy, and the coast generally flat, but rising inland to lofty mountains.

At 16 miles S. by E. from the mouth of the Guaratuba is the point of *João Diaz*, the North point of the island of S. Francisco, and which forms the eastern extremity of the river of that name.\* The islets of *Garcia* are on this parallel, at  $2\frac{1}{2}$  miles to the East of the point. The river is broad, but not very deep, and falls into the sea in a N.N.E. direction; the bay before its mouth affords anchorage in several depths, and at 2 leagues off there are 9 fathoms of water, over a bottom of fine sand. The shore is flat; the lands in the environs not very high, but distinguished by some remarkable hills, and at a few leagues in the interior stand the *Serras de Maratuba*, a chain of very high mountains.

At four leagues South from the Garcia Islets is another group, called the *Tamborettes*, at about two miles from the nearest shore. Five miles to the S.S.W. of the latter are the *Remedios Islets* and the *Lobos Tupilingo*, situate off the mouth of the *Aracary*, or southern branch of the Rio San Francisco. All these islets are covered with trees, and small vessels only pass between them and the shore.

From the Aracary to the Point *Itapacoroya*, the low coast, in an extent of eight leagues, forms a slender bay, broken only by one small river, the Itapucu. In the southern part of this bay are the Itacolomi Rocks, 16 feet above water, and the *Feya*, of 32 feet. Here, also, is an armação. Near the islets you may anchor and obtain fresh water, sheltered from winds between the South and West.

Between the Point Itapacoroya and the Island of Santa Catharina, or Saint Catharine, the coast forms several bays, receptacles of the waters of five small rivers. In the last of these, to the N.W. of St. Catharine's, named *Tijoucas Bay*, there is good anchorage.

In September, 1831, H.M.S. *Volage*, on her passage to St. Catharine's, struck soundings in 14 fathoms, bottom of mud, in latitude  $26^{\circ} 44'$ , and longitude [corrected]  $48^{\circ} 5'$ . From thence, while the ship was sailing two miles W. by S., bottom was found with 14 to  $12\frac{1}{2}$  fathoms; after which, on steering West and W.S.W., the water deepened suddenly to 23 and 29 fathoms; and these depths were preserved until the isle Arvoredo, at the North end of St. Catharine's Island, was passed. These soundings are represented on the chart. The variation here was found to be  $7^{\circ}$  East.

On approaching St. Catharine's, from the northward, several small isles and islets will be seen. The largest is that named *Arvoredo*, in latitude  $27^{\circ} 16' 47''$ , long.  $48^{\circ} 20'$ . The channels between are perfectly safe; the depths varying from 22 to 11 fathoms, bottom of oaze and gray sand; taking care only to avoid the rock and breaker of San Pedro, which is situate at about 3,000 toises or fathoms W.N.W. from Arvoredo. You may range along the points of land to the north-westward of these isles, named Zamba, Bombas, Garopas, and Camboriu, at the distance of 2 or 3 miles.

**ISLAND of St. CATHARINE.**—This island, which forms an excellent harbour, lies between the latitudes of  $27^{\circ} 22'$  and  $27^{\circ} 50'$  S. The harbour was visited and described by Captain Pérouse in 1785, and by Admiral von Krusenstern, on his passage outward, in 1804. The island is nine leagues in length, and its greatest breadth is ten miles. The soil has been described as very fertile, producing rice, maize, mandioc, and coffee, oranges, and a variety of fruits, besides indigo and sugar. The lands have latterly

\* The town of S. Francisco is on the North shore of the island, at 6 miles from the mouth of the river.



been much improved : extensive tracts, formerly covered with large trees, have been cleared for ship building ; so that the quantity has been much reduced. Palm trees may be seen in every direction. Of birds there is great variety, and among the animals are opossums, monkeys, and armadillos, with snakes and serpents. The climate is, in general, serene and salutary, the tropical heat being moderated by the sea breezes. The population exceeds 30,000. The island is divided into four districts, and the divisions on the opposite coast of the continent are under the jurisdiction of its governor, who is subject to the general government of Rio Janeiro.

Of the harbour Admiral Krusenstern has said, "Those going round Cape Horn, or destined for the whale fishery upon this coast, cannot desire a better harbour than St. Catharine's to run into. It is infinitely preferable to Rio Janeiro, where strangers, particularly if they arrive in merchant-ships, are treated with the same insulting jealousy as in Japan.\* Even Cook and Banks were exposed there to insults, the very relation of which cannot fail to excite disgust. In St. Catharine's, in the vicinity of which there are no diamond mines, a stranger enjoys perfect liberty. The harbour is excellent, the water is very good, and easy to be procured. Firewood may be felled free of expense ; and, for what is really felled, and the vender himself brings on board, a charge is made of ten piastres the thousand ; every log of which is upward of three feet long. The climate is particularly healthy. Our people, after a residence of seven weeks here, were all perfectly well ; during the first days, indeed, several of them were seized with a violent colic, which lasted only a few hours, and then disappeared entirely. The heat, even in January, the hottest summer month, is quite tolerable ; and it is diminished by the constant fresh sea breeze. Provisions and fruits, of all descriptions, are here both cheap and abundant. We purchased, for example, an ox, weighing 400 lbs., for eight piastres ; a hog, weighing 200 lbs., for ten ; and for five fowls we paid one piastre. The season was still too early for oranges and lemons, yet we had them, by thousands, for a mere trifle. Water-melons and pumpkins were in the greatest plenty. Of fish, indeed, we found a great scarcity ; but the season, owing to the heat, was unfavourable for fishing, which is accounted a very profitable employment, excepting in the summer months. The only vessels used for this purpose are canoes, hollowed out of a single tree, of which some are more than thirty feet long, and only three feet wide : owing to this narrowness, though they run with great rapidity, they cannot venture to sea in rough weather.

"I shall conclude with some nautical and astronomical observations which we made there. The entrance is as easy as possible. The islands Gal and Arvoredo (at the entrance) are not to be mistaken : the first, which is the smallest, and lies most to the northward, is particularly remarkable by its long white streaks on the steep side, as well as by two small rocks, which lie at the N.E. extremity. At the distance of about nine miles the depth is 30 fathoms, and gradually decreases. In coming from the northward it is best to steer between the islands Gal and Arvoredo, leaving the small rocky islet S. Pedro on the right. The latter lies three miles W.N.W. of Arvoredo. The anchorage is perfectly safe everywhere, whether to the northward or southward of the fort Santa Cruz, which stands at the entrance ; yet it is better to anchor to the southward, as well on account of communication with the town, as of the vicinity to the village of S. Miguel, where the best water is to be procured. In coming to St. Catharine's, from the southward, you steer between the island of Arvoredo and that of St. Catharine. The passage is perfectly safe. If the wind should be contrary, a ship may work in without danger ; for, close to St. Catharine's, there are four fathoms of water, and the coast toward Arvoredo is equally deep.

"The observations on the tides were made on the island of *Anhatomirim*, where the observatory was erected by Dr. Horner. The following are the remarks which he communicated to me on this subject.

"The ebb and flood are here very unsettled, and depend entirely on the wind. The flood sets in from the North, the ebb from the South ; and, as the wind is almost always from the sea, the ebb, with a fresh northerly wind, is scarcely apparent, and seldom lasts more than two or three hours. The water continues sometimes at its height for three or four hours together, during which no change whatever was perceptible, either in its increase or decrease. The lowest tide we had was on the 27th of January, (1804,) one day after the full moon, with a fresh North wind ; and the highest tide, which rose three feet, was two days after the full moon, with a very moderate N.E. wind. A southerly wind kept the water up above an hour.

\* It is almost superfluous to say that this is no longer the case.—Ed.

"The variation of the needle, which Frezier, in 1712, found to be  $10^{\circ}$  E., we found by a mean of two compasses,  $7^{\circ} 50'$  E."\*

The description of La Pérouse accords well with that of Admiral Krusenstern, and so does that of Captain Lisiansky. M. Pérouse, who visited the harbour in November, 1785, says, "The approach of ships to St. Catharine's is very easy. At eighteen leagues in the offing there are sixty-six fathoms of water, over a bottom of soft mud, gradually shoaling till within four cables' length of the shore, where there are still four fathoms of water."

The Baron Roussin says, that the island of St. Catharine is sufficiently elevated to be seen in clear weather at the distance of fifteen leagues. At this distance is found sixty-two fathoms of water, and this depth diminishes to four cables from the coast, where there are only four fathoms.

On approaching from the East the island appears in very irregular heights, being intersected by mountains separated by deep valleys; the greatest elevation is from North to South, and the mountains of the continent beyond it are a little more elevated than that of the island. You will particularly distinguish among them the *Morro de Camborella*, a branch of the eastern *Cordilheiras*, extending from St. Catharine's to Rio Janeiro.

About the middle of the isle, near the sea, is a large lagoon, under the high lands, which presents an apparent opening that may serve as a landfall. When at three leagues from the eastern coast you bring this opening to the West, the N.E. point of the isle will bear about N.W. at three leagues.

All the exterior coast is clean and moderately steep, and you may range along it without danger, passing several large rocks which lie off it, as hereafter described.

The island may be navigated all round, and it presents numerous anchorages between its western coast and the continent, but the North part of the intervening channel is the part most fit for vessels drawing much water, and it is, therefore, that generally used. This passage is rather less than two leagues broad, is clear of danger, and on coming in you may advance to either side, only observing to keep clear of the *Northern Moleques*, large rocks which lie to the S.E. of Point Rapa, the North point of the island. This channel hence is clear, and you may beat up to either shore without risk, in from 40 to 28 feet of water.

Having advanced within the strait you may anchor in any part according to the vessel's draught, and in keeping near mid-channel the depth will be sufficient for large ships when at 1,000 toises (1,065 fathoms) S. by E. from the little isle Anhatomirim, on which the fort of Santa Cruz is built. Passing this point, on advancing to the south-westward, the depth gradually decreases to 15 and 12 feet; and to the southward of the Raton Islets, lying on the eastern side, there is not more than 10 or 12 feet of water. In the large bay to the West, called the *Sacco Grande*, the depths are still less; this bay is a tranquil place, frequented mostly by vessels employed in the whale fishery off the coast, and is well adapted for small vessels.

The bottom is of mud, in almost all the anchorages of the gullet. From that which vessels of war mostly frequent, the following are the bearings by compass.

Point Rapa, the North point of St. Catharine's, N.  $62\frac{1}{2}^{\circ}$  E.; middle of the fort Santa Cruz, N.  $56\frac{1}{2}^{\circ}$  E.; Fort of St. José, near the N.W. point of St. Catharine's, N.  $62\frac{1}{2}^{\circ}$  E.; and Point of the Armação on the continent, N.  $9^{\circ} 50'$  E., allowing a variation of  $7^{\circ}$  E. The depth is about  $5\frac{1}{2}$  fathoms, and the bottom greenish mud, good holding ground. This place is generally smooth, being sheltered by the high lands around. The only open direction is N.W., but the winds from this direction are seldom strong.

There are several good watering places hereabout; the best is at 2 miles to the North of the isle Anhatomirim, on the continent, where plenty of excellent water may be obtained without expense, either by day or night, and permission may be obtained for cutting fire-wood, either on the continent or on one of the Raton Isles. You may also, at a moderate price, obtain building wood for repairs, should it be required. In short, the principal town of the island, and the habitations near the anchorage, supply, on reasonable terms, all the necessaries and refreshments produced in the country. These consist in cattle, pigs, fowls, rice, maize, arrack, farina of manioc, dried meat, sugar, coffee, tropical fruits, &c. The Isle of St. Catharine is, therefore, one of the best *relaches* or stopping places for refreshments for vessels engaged on long voyages, or requiring the same on a return.

\* From the survey of the Isle and Strait of St. Catharine, made by Captain Barral, of the French navy, in 1831, it appears that the rise of tide is from 4 to 6 feet. High water at 2 h. 15 m.

The roadsteads of the island almost always abound in fish ; but the success of the fishery depends on causes but little known ; and all the seasons of the year, any more than all the hours of the day, are not equally favourable. La Pérouse found the fish abundant in the month of November, but Roussin was less fortunate in the same month, and in those of May and August. Most part of the beaches are besides strewed with the bones of whales, which are difficult to avoid when hauling the seine.

When you obtain wood from this country, and from the coasts of Brasil generally, it is best to prefer the young trees ; the old trunks, commonly hollow, being mostly filled with insects and eggs of venomous reptiles, which might be injurious on board. It will be prudent to immerse the wood in the sea, before hoisting it on the deck.

The most common winds in the gullet follow the direction of the strait, either in one way or the other, but they are seldom violent, and the storms are not dangerous to vessels which are well moored. From March to September, which is the season here called the winter or southern monsoon, the winds in the vicinity of the isle blow generally from the South to S.W. ; sometimes very strong, and accompanied with rain ; but these violent crises do not exceed more than 48 hours.

Toward the month of October the winds approach the East and the North ; the six following months constitute the summer, and are the hottest of the year. There are then frequent storms, which come from the North to the S.E. by the West ; and when, in this season, the winds descend from the S.E., they are accompanied with considerable rain : but, in general, the greatest quantity of rain falls during the months of August and September ; but even at this period some years have been exempted.

The tides are regular in the gullet, but it has been remarked that, as they enter by the North and South at the same time, meeting in the roadstead near the town, they return in a similar way, with greater or less velocity as they may be accelerated or retarded by the prevailing wind. The mean velocity of the current rarely exceeds three-tenths of a mile in the hour at half tide, and the difference of level, in ordinary tides, is not more than 3 feet. In the syzygies, however, the current frequently runs at the rate of a mile and a half, and then the water rises and falls 5 or 6 feet. Time of high water, on the full and change, 2 h. 40 m.

Should circumstances require you to seek the protection of the forts, this anchorage will not answer your purpose, and you must seek for that advantage either under the fort of Santa Cruz, on the isle of Anhatomirim, that of St. José, on the Isle of St. Catharine, or the Fort Raton, on the largest of the two islets of that name : but the shot of these fortifications does not cross effectually from either point, at least with the artillery with which they are at present armed.

The governor of the province resides in the town of Nossa Senhora do Desterro, which is situate at about 10 miles S. by E. from the islet Anhatomirim, on the narrow of the strait, about halfway down the island. This place, which is well sheltered, may be reached at all times by small vessels, and the communications between all the points are quickly made. At the anchorage, half a mile before the town, the depth, at low water, is 20 feet.

The approach to St. Catharine's may be made indifferently on the parallels between  $27^{\circ} 30'$  and  $28^{\circ}$ . The winds and currents in the offing are not such as to cause much error in the route ; but at all times you should prefer making the southern part of the isle in the southern monsoon, and that of the North on the contrary.

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The southern part of St. Catharine's and the coast to the southward were not surveyed by Captain Roussin, and, in consequence, M. Barral, commander of the gabare or surveying vessel, *l'Emulation*, was charged with continuing the work, and surveying the Rio Plata. This mission was commenced in March, 1830, and ended in 1832, its result was two general charts, a number of particular plans, which have been finely engraved and since published, with a brief description, to which we owe the following particulars.

The description of St. Catharine's agrees with that of the Baron Roussin. The lands of the island and of the adjacent continent to Cape Santa Marta Grande are very high and woody. The highest mountains which are seen beyond the island are in the chain of *Cubatao* ; they are covered with clouds during the prevalence of southerly winds, but are clear with winds from the N.E. In the offing, at 12 leagues from the island, there are soundings of 62 to 72 fathoms, with a muddy bottom. On approaching, the depth



gradually decreases. At a distance of three leagues are 33 to 35 fathoms, and 18 to 28 at 4 miles.

The *Isle Arvoredo*, at the northern entrance, which is high, has two sugarloaf summits, which are first seen on approaching. The islet *Badejo*, 8 miles to the southward of *Arvoredo*, is destitute of vegetation.

A vessel drawing not more than 14 feet of water, and entering by the North passage for the town N. S. do Desterro, having passed the North end of the island, should be guided by the following indications.

Steer for the Cape Quebra Cabaço, on the continent, leaving the two islets *Ratones* on the larboard side, at a mile and a half or less. The coast toward the island of *Anhatomirim* will be about S.W. by W., and thence S.W. by S.

When you bring the little or southern Raton to bear E.  $\frac{1}{2}$  N. [*East*] at two miles off, change the course to S.E., and continue it thus for 3 miles, passing a rocky flat, *Ipatitinga do Norte*, off cape Quebra Cabaço, on the starboard side. On these rocks are only 4 or 5 feet at low water. When you have brought the cape to the South of these rocks, bearing W.N.W., the route is to the S.W. until you bring the rocks N.N.W.  $\frac{1}{2}$  W.

You then steer to the south-westward, about half a league, so as to pass at 4 or 5 cables to the eastward of a rock near *Cape Henriques*, which, being a woody cape, is thus distinguished from Quebra Cabaço: next proceed south-eastward, toward the narrow part of the strait, leaving the islet and point *do Lial*, on the western side, at the distance of 3 or 4 cables. Steering hence S. by E. you enter the Little Strait or Narrows, which is commanded on the left by *Fort Santa Anna*, and on the right by the battery of *San Joaõ*. Here you will find from 11 to 16 fathoms of water, and will perceive, in advancing, the islets *Gato* and *Das Vinhas*, at the extremities of the cove on which the town is built. You leave the first on the left, and may then cast anchor in 20 to 21 feet of water, with the islet *Gato* bearing N.N.E., *Das Vinhas* S.S.E., and the steeples of the cathedral N.E.

The city of N. S. do Desterro is situate in latitude  $27^{\circ} 35' 25''$ , longitude [*corrected*]  $48^{\circ} 29' 16''$ .

At times, on coming from the northward to the town, there are found spots of only 7 feet of water, but the oaze has 5 feet of depth at least, and the vessel will not be injured. With high water the *Emulation*, which drew 14 feet, came up to the town in three days. When the water was low, and the stream weak, she anchored.

**EASTERN COAST** of ST. CATHARINE'S.—All the eastern coast is clean, but off the points, at some distance, are several rocks and islets above water: these are, the Northern Moleques, the islet *Badejo*, before mentioned, the two *Aranhas*, the *Isle Xavier*, *Ilha do Campexe*, the Southern Moleques,\* the *Tres Irmaõs*, or Three Brothers, the *Papagaio*s Isles, the *Fort Isle*, at the entrance of the southern passage, and the *Isle dos Cardos*, within the same.

The *Emulation* proceeded along the coast at the distance of 3 or 4 miles, and passed between the *Irmaõs* and the Southern Moleques in 15 fathoms of water. The only obstructions are the islets and rocks above mentioned, which may be seen at three leagues off, and about which there are 13 fathoms. At the *Isle do Campexe* you may find anchorage, sheltered from southerly winds.

**THE SOUTHERN PASSAGE.**—The southern entrance into the strait or gullet of St. Catharine's lies between the S.W. extremity of the island, *Point dos Naufragados*, and the *Fort Isle*, a very narrow passage, but in which there are 17 fathoms of water.

When you enter from the southward you should have a leading wind, rising tide, and fair weather, without which the current may carry you on the *Fort Isle*, or on the opposite point, which are less than 300 fathoms apart. The vessel should not draw more than 15 feet. On coming from the southward you steer toward the *Fort Isle*, and, when you have the *Papagaio*s on your left, you will see the *Irmaõs* to the right. On passing hence north-westward, the pass between the *Fort Isle* and *Point Naufragados* will be open. Having passed through, on a West course, you change the course to North, and pass the islet *Cardos*, which is remarkable for an insulated tree which stands on its summit.

You pass to the eastward of *Cardos* at the distance of one or two cables, and then proceed north-westward toward the *Enceado do Brito*, to the distance of half a mile; and

\* The *Isle Xavier* is of moderate elevation and flat on the summit. The *Southern Moleques* are three great whitish rocks, touching each other, and forming what is otherwise called the *Grande Moleque*.

thence, North, along the western shore, to the point of *Pesqueiro Fundo*, at the distance of 4 cables. Thus you will leave, on the western side, the village of *Enceado do Brito*; and farther on a cluster of houses and cottages forming the little hamlet of *Cedros*. On your right, at a distance, you may see the village of *Riberaõ* or *San Lapa*, on the island of St. Catharine, and nearly before you will be an islet, the *Ilha do Largo*.

Before arriving at the last you will have passed a flat of dangerous rocks, beyond which you will be when the steeples of the cathedral appear on the western part of the islet Largo, and the West point of Cardos is on the fort of the South bar.

From off the Isle do Largo continue your course N.  $\frac{1}{2}$  W. until an islet, *des Cascas*, bears West; thence proceed toward the steeples of the city up to the anchorage between the islets do Gato and das Vinhas, which have been described.

## THE COAST SOUTHWARD OF ST. CATHARINE'S.

Under Point Pinheira, which lies at the distance of  $2\frac{1}{2}$  miles from the South end of St. Catharine's, is a good anchorage, sheltered from southerly winds. At  $2\frac{1}{2}$  miles from the outer extremity of this point is an islet, the *Ilha do Coral*, extending North and South; and when seen in this direction it appears of a round form. It is covered with trees, is about three-quarters of a mile in length, and is a useful mark for vessels bound in by the southern passage. Its situation is latitude  $27^{\circ} 55' 10''$ , longitude  $48^{\circ} 29' 10''$ . Between this islet and the Cape Sta. Marta Grande, in latitude  $28^{\circ} 39'$ , are other islets, which lie off shore as follow.

The Ilha das Araras, to the S.E. of Point Bituba, latitude  $28^{\circ} 18' 0''$ , longitude  $48^{\circ} 31' 32''$ .

The Islet Tocoromi, a high and steep rock, to the S.E. of the Ilha Arara, latitude  $28^{\circ} 19' 29''$ , longitude  $48^{\circ} 30' 30''$ .

The Isle dos Lobos de la Laguna, to the S.E. of the Araras and Tocoromi, latitude  $28^{\circ} 24' 36''$ , longitude  $48^{\circ} 40''$ .

At point Bituba begins the beach, within which is a lake and the towns of *Villa Nova*, *Santa Anna*, and *la Laguna*. The last has some trade with Rio Janeiro, and is situate at the South part of the lake, at a mile to the N.W. of the bar, in latitude  $28^{\circ} 28' 33''$  and longitude  $48^{\circ} 45' 24''$ . At la Laguna is anchorage, practicable only for small vessels drawing under 7 or 8 feet of water, as there is a bar at the entrance.

The cape Santa Marta Grande is the final termination of the line of mountains extending within shore to the northward, and is remarkable by having on its summit several great white rocks, which from a distance appear like an assemblage of houses. The variation of the compass here, in November 1831, was  $7^{\circ} 20'$  E.

Between cape Santa Marta Grande and the bar of the Rio Grande de San Pedro, an extent of about 95 leagues, the coast is extremely low, and variegated only by sandhills and stunted bushes. It can hardly be seen, in clear weather, from the masthead, at the distance of 7 or 8 miles, and from the deck at not more than three miles; the first part, from the North, trends nearly S.W. This part is called the *Praya*, or Beach of *Torres*; it begins in longitude  $48^{\circ} 44' 56''$  and ends in  $49^{\circ} 55' 52''$ . The second part trends N. by E. and S. by W., and is called the *Praya*, or Beach of *Fernambuco*. Its eastern part begins with the termination of the former, in latitude  $29^{\circ} 52'$ , and it extends to longitude  $54^{\circ} 34' 52''$ . The third part trends nearly S.W., and is known under the name of the *Praya do Destreito*, from latitude  $31^{\circ} 12'$  to the mouth of the Rio Grande de San Pedro.

When to the southward of cape Santa Marta Grande, you may see, in running along, a chain of mountains extending westward about 15 leagues from the sea into the interior country, and disappearing at *Torres*, which stands 25 leagues from the cape in latitude  $29^{\circ} 28'$ . The beach here may be approached to the distance of 3 or 4 miles, and was coasted at this distance by the *Emulation*; but there were no marks on shore fit for triangulation, and the situation of the vessel was ascertained by frequent observation and estimated distance from shore.

Twenty-seven fathoms of water, bottom of sand, mud, and shells, were found at four miles to the South of cape Santa Marta Grande, and beyond that, in going to Torres, the water diminished to  $4\frac{1}{2}$  fathoms near the shore. We may judge of the decrease of bottom in remarking that from the 27 fathoms to the  $4\frac{1}{2}$  there is a distance of 25 leagues.

The *Praya do Fernambuco*, between the parallels of 30 and 31 degrees, is more steep than that of Torres. The *Emulation* found 35 fathoms of water, bottom of mud and sand, at 4 or 5 miles from the shore. On sailing out in the offing, to the distance of 15 leagues, the depths of water increase progressively to 85 fathoms, soft sand. Passing this limit there was no bottom at 100 brasses or 91 fathoms. At ten leagues out the depth is about 74 fathoms.

The *Praya do Destreito* terminates at the Rio Grande de San Pedro, as above mentioned. From 9 to 13 fathoms were found in coasting along it, at 3 or 4 miles. At this distance the *Emulation* ran 17 leagues, over a bottom of sand. The shore is not higher than that of Fernambuco, but there are some sandhills more elevated, and there is more vegetation.

In the offing, at 20 or 24 leagues S.E. from this beach, are 34 and 35 fathoms of water, bottom of mud and sand, and on approaching land the depths gradually diminish.

We may remark that the beach of Fernambuco, the central beach of the three, has most water near the shore and in the offing; while, on the contrary, that of Destreito is that which has the least.

**RIO GRANDE.**—The district of the Rio Grande de San Pedro is of great importance to the northern parts of Brasil; its port being the channel of communication with a rich interior, which supplies pulse, grain, and other productions. It includes the whole of the great lake called the *Lagoa dos Patos*, and of the rivers which fall into it, from the North and West. The bar is represented in lat.  $32^{\circ} 9'$ , and long.  $52^{\circ} 4'$ . The entrance is shoal and difficult, and the bar frequently shifts; but, after passing the latter, you enter into the *Lake*, and may then take a berth, or navigate as convenient.

The climate is so fine and the land so productive, that the country has been styled the Granary of Brasil. Wheat is exported hence to all the northern provinces. The population, taken within the circuit of 60 miles, has been computed at 100,000. The occupations of the inhabitants, an athletic and robust people, are mostly the rearing of cattle, drying and preparing hides, salting and drying beef, collecting tallow, horns, and horse-hair. These staple commodities and productions give employment to more than 100 sail of coasters, some of which make two or three voyages in the year, importing rum, sugar, tobacco, cotton, rice, mandioc, sweetmeats, &c. Of European commodities they import wine, oil, olives, glass, iron, baize, coatings, stout woollen cloths, Manchester goods, printed cottons, calicoes, muslins, handkerchiefs; silk, cotton, and worsted hosiery; hats, flannels, &c.; sail-cloth, cordage, anchors, tar, paints, fowling pieces, and ammunition of all sorts; hardware, particularly slaughtering knives; plated ware, and fancy articles. The greatest part of these are conveyed into the interior on the backs of horses; but, as of late the markets have been over-stocked, the trade is much reduced.

The neighbourhood of the town is unpleasant; the high winds so shift the sands that they penetrate into the very houses. The cattle in the neighbourhood are very numerous, as well as in the interior districts; but it is singular that neither butter nor cheese is made, nor is milk at all times to be obtained; and, although excellent grapes are produced, no wine of the country is obtainable. Mr. Luccock, on proceeding to this place, in 1809, has said,

“On approaching the coast of Rio Grande do Sul we first made land in the neighbourhood of *Estreito*, about nine leagues north-east of the bar of the river whence the province takes its name. Little round hillocks of sand, without the slightest degree of vegetation, seemed to rise out of the water, to which a splendid sun communicated a dazzling whiteness. Soon it appeared that these were only inequalities of a sandy shore, from the midst of which arose the church of *Estreito*, a small building in the usual style of such edifices in the villages of Brasil. A few trees and a scanty portion of verdure about it now becoming visible, served to increase the forbidding appearance of the surrounding desert. Long before we saw any marks, by which to guide our course, we were in shoal water, and encompassed with sandbanks.

“The captain, having stationed himself at the masthead, saw these shoals and the channels between them more clearly than they could be discerned from the deck, and gave us directions how to steer. At length a boat came out to meet us, with a pilot on board, and, by appropriate signals, did us the same service. These signals not only point out the course which a vessel is to take, but sometimes direct her to anchor where she is, or even to proceed again to sea when there is not water enough on the bar to carry her safely over.



The first of these directions is given by holding from the boat a small flag in the direction which the vessel ought to take; the two latter by lowering it altogether. The signals are explained hereafter.

"When we had reached the boat she did not put the pilot on board, but proceeded a little a-head, sounding with a long pole, which was dexterously turned over from end to end, as we proceeded across a broad and shallow bar, situated in a deep and dangerous bight. We entered the river between a bluff head to our left, and a long low sandy point to the East, through a passage about half a mile wide, guarded by a few miserable erections called forts and batteries. Just within the passage lie the vessels which have received their lading, and are ready to proceed on their voyages, waiting for a sufficient depth of water on the bar. Round the point resides the *piloto-mor*, who has the superintendence of the place, and to whom I am greatly obliged for many kind and gentlemanly attentions.

"The decline of day, and tediousness of our progress, rendered me impatient, and induced me to ascend the mast, hoping to look beyond the flat, dreary, desolate, and almost houseless waste, immediately before our eyes. From thence nothing was to be discovered, on the East, but loose and barren sand: westward appeared a tract of swamps, partially covered with brushwood; beyond, a broad line of water, the Bay of Mangueira; and, still farther, the small white pretty looking town of *St. Pedro do Sul*, commonly called *Rio Grande*. The church, which the people dignify with the name of cathedral, rose in the centre of the buildings, and formed the chief feature of the view. Before us lay several vessels at anchor, and among them a fine schooner with the British flag flying, indications of commerce which cheered our spirits, and gave us a more pleasant evening than we had enjoyed for a long time.

"Customhouse officers were put on board at the batteries; and the next morning the vessel was brought up to her anchorage in a masterly style, close to the village of *St. Pedro do Norte*, and three miles from the principal town; the sandbanks not permitting a nearer approach. From the entrance of the river to the anchorage, through a course of nine miles, the same obstructions prevail, leaving a narrow intricate channel, with barely water sufficient for a deep-laden brig. About six miles up, on the left hand, is a large bay, still called the bay of Mangueira, though little of that plant remains on the neighbouring swamps. In the bay fishes of various sorts so abound, that afterward crossing it at a late hour, great quantities threw themselves over our canoe, in every direction, and some fell into it. A little higher up is another broad inlet, navigable for yachts of fifty tons, within which is the fertile island of *Marinheiros*, containing some of the highest land, and the best cultivated spots, in the neighbourhood. The soil is a red clay, which shows that it was once attached to the continent, and is of older formation than the bay. It is celebrated for the production of onions, and of an article of higher value: from hence, or from the island of *Sta. Maria*, the town is supplied with almost the only drinkable water used within it. Beyond these islands the water expands to a breadth of more than ten miles, but is so very shallow, that the practicable channel, which runs near the eastern shore, is in one part not more than 100 yards wide. Other islands, besides those which have been mentioned, are scattered about this expanse of water, and communicate to it some little ornament. The distance from the bar to the entrance of the *Lagoa dos Patos* is about thirty miles; the whole of which is, with some impropriety, called the *Rio Grande*, and considered as the harbour of *St. Pedro*. Through this long course the channel is hardly any more than 12 feet deep, and, in some places, reduced to 6 inches; so that three feet may perhaps be nearly the average depth of the river.

"The country, as we advanced toward *St. Pedro*, and even in the environs of that town, was not much better than that portion already described. When settled, my favourite morning walk was to a fort upon the summit of the loftiest hillock near the place, from which, small as the elevation really is, there is a spacious view of the river, and of a region wild and desolate in almost every quarter. To the North lies the fine island of *Marinheiros*: to the South a marshy track, partially covered with vegetation, the ground rising and becoming drier as it approaches the ocean; to the East, beyond the water, are loose sandhills, their height from 120 to 140 feet; the tops are usually round: toward the West the country is also sandy, gently undulated, and destitute of everything green. When the wind blows strongly from the S.E., as it often does, it brings with it so much sand, which whirls from the tops of the hills like smoke from a volcano, that the eyes can hardly venture to take that direction. Turning the back to the wind for relief, the sand is seen travelling onward like a vast fall of snow; a portion of which, impeded by the town, is piled against the houses, and sometimes mounts and crushes the roofs. The extent of this desert, how-

ever, is not great; it forms a slip along the edge of the ocean, not more than fifteen miles broad at a medium, though it is 300 miles long; and here and there are scattered rich oases, the sites of pleasant farms. The sand evidently comes from the ocean, being first cast upon the coast, and then driven farther inland.

"The town of St. Pedro, situated in a level plain, not many inches above high-water mark, contains about 500 dwellings; and the whole number of stationary inhabitants may, perhaps, be 2,000; two-thirds of which are supposed to be white, or very slightly tinged. But some of the houses, belonging to persons who reside on their estates, are seldom occupied, except at religious festivals.

"There were here marks of vigour, precaution, and discipline, such as I had not before seen in this part of the country. On the northern side of the Plata not a single sentinel made his appearance; and the soldiers were ill-clothed, and worse accoutred. But at Rio Grande men under arms, properly furnished for their duty, were stationed at the government house, on the quay, and at all public offices.

"The neighbourhood of the town afforded a sphere for the consumption of some of its imports; more of them proceeded up the Lagoa dos Patos, to Porto Alegre, and the rivers that fall into it: up the Lake Mirim, and through the Ygaroon to the fine country lying at the back of Monte Video and Maldonado. From these extensive waters the exports are collected, consisting chiefly of hides, tallow, wheat, onions, cheese, and charqued or jerked beef: all these articles are sent to Rio Janeiro, only that Bahia shares with it the last mentioned. The vessels sailing from Rio Grande, in 1808, amounted to 150, half of them to Rio Janeiro; they were, in general, brigs from 100 to 200 tons burden, and completed their voyages in four or five months. The country produce is brought down in yachts, of from 20 to 70 tons burthen. A few of the brigs load at Porto Alegre; the greater part at St. Pedro, whence all are obliged to take their clearance. The value of this trade to Brasil is incalculable, notwithstanding the injury which it receives from the government's draining the country of its cash, and furnishing nothing in return."

**SAILING DIRECTIONS.**—1st. by *Captain Wm. Grant*, in 1802. Finding yourself in latitude  $31^{\circ} 30' S.$ , and having N.E., E.N.E., or easterly winds, (any other winds may be dangerous, that is from the sea,) you may stand with security for the land, [see the note on *Reid Shoal* below,\*] steering W.S.W., until you find yourself in soundings; and when you find yourself in 13 fathoms, you will see the land, if to the northward of the bar; but if you have passed it, you will not, as the bank to the southward stretches out to a greater distance; and you cannot see the land unless when you are in 8 fathoms, and then barely.

The land, about  $31^{\circ} 40'$ , you will know by seeing several tufts of trees, pretty high and rounding to the northward; and, standing along shore, steering S.W. you will see sundry straggling tufts, but not so high. Here, if it be very clear weather, you may see houses, which will appear in the opening of the trees. You may then stand along shore with safety, keeping in from 10 to 9 or 8 fathoms. Losing sight of the trees and houses, you will see some mountains of sand, and an entire sandy beach; and, when you are within two leagues of the bar, you will see tufts of trees, and find the soundings decrease, with a bottom of mud and red shells. You must now keep in 8 fathoms, but not less, as the water sets right on shore when close to the beach. The lead must now be kept going until you find soft mud, when you will find yourself close to the bar, which may be known by seeing several stakes along the beach: you must then haul up and steer South, to keep clear of the bank. You may easily know the bank by the sea's breaking over it, particularly from the eastward.

2nd. Directions by *Captain James Harrison*, of the brig *General Wolfe*, which first appeared in the *Nautical Magazine*, October, 1836.

\* In proceeding, as above, toward Rio Grande, caution is necessary, as it appears that a shoal lies in the track from the north-eastward, "*REID SHOAL, BRASIL*." The following has been communicated in a letter from Mr. Reid, of the brig *Sweet Home* of Aberdeen, dated Rio Grande, March 14th, 1842. The vessel, on her voyage from Liverpool to that port, struck on a shoal, in latitude  $31^{\circ} 3' S.$ , and longitude  $49^{\circ} 47' W.$ , at last 40 (?) miles off the Brazilian coast. Luckily there was no sea on, and the wind was N.E. by E., which enabled her to clear the shoal immediately, making but little water. After his arrival at Rio Grande the master of the *Sweet Home* ascertained that a Brazilian schooner had grounded on the same reef a short time before. The reef or shoal has not been laid down in any chart, and lies immediately in the track of vessels bound to that port."—*Shipping Gazette*, July 1st, 1843.

No vessel should attempt to enter, if drawing more than  $10\frac{1}{2}$  or 11 feet of water, and she must have a leading wind, in order to cross the bar.

"The land ought to be made to the N.E. of the bar, in about latitude  $32^{\circ}$  S. There is no difficulty in doing this, as the soundings are perfectly regular, about 60 fathoms at 60 miles' distance, and shoaling very gradually. When in 10 or 11 fathoms you will see the land. It is not advisable to get in-shore to the southward of the bar.

"The coast is little known; and I could never get any of the coasters or pilots to give me any information about the shoals said to exist thereabout. In general, but not always, the bottom is mud to the southward, and abreast of the bar, whilst it is usually sand to the northward; and, if to the southward of the port, the land will not be seen till you are in 7 or 8 fathoms. I do not know of any marks to tell how far you are from the port, as the whole shore consists of low sand-hills, interspersed with bushes, and these hills alter their shapes with every gale of wind. The town of *Estreito* lies about 30 miles N.E. of the bar, but you must be close in-shore to see it. This is the only object which breaks the sameness in the appearance of the coast for many miles. The latitude is the best guide.

"After making the land, run down at a convenient distance, till you see a square white tower, which stands at the entrance of the harbour, in latitude  $32^{\circ} 9' S.$ \* This is a very conspicuous object; makes like a sail at a distance, and may be seen some time before the land about it. On the top of this tower (which shows a bad light at night,) a man is stationed, who, as soon as he perceives a vessel, hoists a red flag, when the pilot boat goes out to sound the bar. So soon as you see the tower distinctly hoist the signal corresponding to your draught of water at the fore, as presently explained. When you get down to within three or four miles of the tower haul in-shore into  $4\frac{1}{2}$  fathoms, if a commanding breeze, or you may bring the tower to bear W.N.W.  $\frac{1}{2}$  W., and steer for it; when you will soon see the boat at anchor on the bar, with the signal corresponding to the depth of water on the bar flying at her masthead.

"Particular attention must now be paid to a man in this boat, who will wave a small red flag on the end of a long pole, in the direction you are to steer. Thus, if he wants you to steer more in-shore, he will point toward the shore, and keep it pointed in that direction till your course is altered sufficiently, when he will lower it, and *vice versa*. Luff to, or bear away immediately, according to the signals he makes. When you get near the boat, he will weigh his anchor, and proceed ahead of you. Follow in his wake, still paying attention to his signals, and you will soon pass a second boat at anchor: here the water deepens, but the channel is not a cable's length broad. After passing this boat you haul more up toward the guard schooner, and choose your anchorage anywhere to the westward of and near her, (till you are out of quarantine,) in from 4 to 8 fathoms, excellent holding ground. Do not go to the eastward of her, as she lies on the edge of the bank. Have an anchor ready the moment you are over the bar, as it frequently falls little wind when you open the river, with a strong current setting out over the banks.

"The bar has been moving gradually for some years past from the S.W. to N.E. It has moved about a quarter of a mile to the N.N.E. since I have known it; that is to say, in about two years.

"There are no regular tides in the Rio Grande; the current commonly runs with the wind; and, as in the river Plata, and, I believe all along this coast, S.W. winds raise the water, and north-easters depress it; consequently a vessel may load in the port to twelve feet, as there is almost always plenty of water with the S.W. wind which blows right over the bar.

"The S.W. storms, called *Pamperos* by the Buenos-ayreans, and *Rebojos* by the Brazilians, blow furiously here in winter, about the full and change. They usually come on in a sudden gust, though the appearance of the sky gives sufficient warning for some time first, and blow very hard indeed for five or six hours, when the wind decreases, and a few days of very fine weather succeed. Sometimes they draw round to the South and S.E. before the wind abates, which renders it highly dangerous for a vessel near the coast. As the water is shoal there is a deep ground swell, which sets a ship very fast in-shore. The signals are made in palms, each palm being nine inches. I am aware that the proper Portuguese palm is somewhat less; but nine inches is always the calculation made here for the draught of water."

\* M. Barral gives it as only  $32^{\circ} 7' 20''$ .—ED.



The signals to be hoisted at the fore-top gallant masthead, on making the tower of RIO GRANDE DE SAN PEDRO, in 1836, were as follow :

- A white pendant signifies 7 palms, or 5 feet 3 inches English.
- A blue pendant, 8 palms, or 6 feet.
- A red pendant, 9 palms, or 6 feet 9 inches.
- A white flag, 10 palms, or 7 feet 6 inches.
- A blue flag, 10½ palms, or 7 feet 10½ inches.
- A red flag, 11 palms, or 8 feet 3 inches.
- A white flag over a blue flag, 11½ palms, or 8 feet 7½ inches.
- A blue flag over a white flag, 12 palms, or 9 feet.
- A white flag over a red flag, 12½ palms, or 9 feet 4½ inches.
- A red flag over a white flag, 13 palms, or 9 feet 9 inches.
- A blue flag over a red flag, 13½ palms, or 10 feet 1½ inch.
- A red flag over a blue flag, 14 palms, or 10 feet 6 inches.
- A blue pendant over a white flag, 14½ palms, or 10 feet 10½ inches.
- A white flag over a blue pendant, 15 palms, or 11 feet 3 inches.
- A blue pendant over a blue flag, 15½ palms, or 11 feet 7½ inches.
- A blue flag over a blue pendant, 16 palms, or 12 feet.
- A blue pendant over a red flag, 16½ palms, or 12 feet 4½ inches.
- A red flag over a blue pendant, 17 palms, or 12 feet 9 inches.

The same gentleman, under the date of April, 1838, again writes: "In December, 1836, I entered by the N.E. bar, (the one for which I sent you directions,) but the pilots said then, that a small swatchway to the southward, which usually had about 7 feet on it, was improving; and in March, 1837, I saw a brig go out by it, drawing 9 feet 3 inches; still there was no change in the N.E. bar.

"I arrived there again in October, 1837, and entered by the N.E. bar, drawing 10 feet 6 inches. The pilots then said that the southern bar was far the best. Soon after I arrived, the N.E. bar closed up, occasionally opening out again, but never with much water on it, so that vessels now enter by the new southern bar.

"The directions given in my former letter for making the tower may be followed with the wind at N.E., which is the prevailing summer wind, but no vessel can enter with that wind, as the course will be N.E. immediately after crossing the shoal part of the South bar. If the wind is southerly, the land had better be made just to windward of the port, and you may probably enter at once. The signals, mentioned in my former letter, are to be hoisted at the fore, and the red flag on the tower will be hauled down if you cannot enter.

"On making the tower you will perceive on the top of it two perpendicular flagstuffs, (one taller than the other,) and two horizontal poles. The tall flagstaff is for the red flag, as a signal for you to steer for the bar. With any signals which may be hoisted on the short flagstaff you have nothing to do. These are intended to intimate to vessels *in the harbour* that they can go to sea. Formerly this short flagstaff could not be seen from the sea, being hid by the light-room which was on the top of the tower; but the light-room was burnt down (by a party of revolutionists) in January, 1837, and has not since been rebuilt; of course there is no longer a light. The two horizontal poles, which project from windows a few feet below the top of the tower, are for pointing out to a ship at sea which bar she is to steer for; one of these poles points to the S.W., and the other to the N.E. If the ship be steering for the N.E. bar, and the lookout man wishes her to go to the southern one, a flag will be run out on the S.W. pole, and *vice versa*. Sometimes if the lookout man sees that a vessel is puzzled to find the bar-boat, (which is occasionally not easily seen on account of the high breakers between her and the ship,) he will direct her by means of these flags: steer to the N.E. when the N.E. flag is run out, and to the S.W. when the S.W. is out, paying attention to them in the same way as you do to the waving of the flag in the bar-boat. As soon as the lookout man perceives that you can see the signals from the bar-boat, he will desist. Though these horizontal arms are intended for this purpose, and are sometimes used when a vessel gets into danger, a stranger must not rely upon seeing them, as the pilots are very inattentive.

"When I wrote before there was an opposition party of pilots, which made them all very much on the alert. This did not last many months, and they soon relapsed into their old careless habits. If running down the coast from the N.E. and proceeding for the South bar, do not haul too close in-shore, when within 3 or 4 miles of the tower, but keep in about 6 fathoms, so that you may clear the bank, which fronts the entrance of the river. If the wind will allow you to enter, and there be sufficient water, which will be known by

the red flag being kept up, you may bring the tower to bear North, and steer for it until you see the bar-boat. Then pay attention to the waving of the flag from the boat, as mentioned in my former letter: when he weighs, follow in his wake. The course will be about N.W. But you cannot go wrong by following in the wake of the bar-boat, and paying attention to the waving of his flag.

"The southern bar is, in some respects, better than the other used to be. The channel is considerably broader, and the shoal part much shorter, being not above 2 cables' length across, and deepening quickly both inside and outside to 3, 4, and 5 fathoms. There are other circumstances against it. In my former letter I observed that N.E. winds depress the water, and that south-westers raise it; therefore you cannot load so deep in the port as formerly, as you cannot get out with a S.W. wind. Again, if a S.W. wind blows strong, which it frequently does, at its very commencement, it raises such a sea on this southern bar, as to render it impassable for a vessel which may be outside; in fact, the bar-boat could not get out. I came out over this southern bar in December, 1837, drawing 11 feet 3 inches, with a northerly wind, and the water unusually high for the wind in that direction. The brig thumped over all the shoal part. Fortunately the sea was abeam, so that she fell bodily on her keel fore and aft; and, as the ground is not hard, she did herself no harm. I do not think any vessel ought to go there, drawing more than 10 feet 6 inches, though many do so.

"With a S.E. wind I would not advise any one to run for the coast, unless the weather promises to be quite fine; with the wind from the N.E. round to the northward there is pretty good anchorage in 5 or 6 fathoms, just outside the southern bar; you will be sheltered by the bank to the N.E., and if the wind come round to the N.W. you may enter, but beware of a south-easter. There is plenty of room for a fore and aft rigged craft, of little water, to beat over the bar, but the current generally runs too strong with the wind. According to the pilots this southern bar is nearly in the same position that it was about fourteen years ago, and that it gradually moved to the N.E. until it got close to the shore, about 2 miles to the N.E. of the tower, when (as we have seen) it closed up, the bank at the same time opening out again to the southern; I should therefore suppose it likely that this would do the same."

3rd. The following official directions will confirm the previous instructions. They are from the inspector of the bar of San Pedro, April 15th, 1842.

All vessels bound to Rio Grande of San Pedro do Sul coming from the North should keep in 6, 6½ fathoms water, until they bring the tower to bear N.N.W., when they will see the pilot boat on the bar, and the tower with a red flag hoisted, which is the signal to approach the bar to enter. If the flag on the tower is hauled down, vessels should lay off and on until it is again hoisted; and when they cannot get in, they should keep under sail, if the wind is from N. to N.E.

The winds that prevail generally after mid-day to dark are E.N.E. to E. from December to April; and, when not able to get in during these months, they can anchor in 7, 7½ fathoms water, bringing the tower to bear N.N.W.

If preferred to keep under weigh, ought not to approach the shore to less water than 7, 6½ fathoms, and to stand to sea as far as 14 fathoms water.

Vessels coming from the South should keep in 6 fathoms of water, until the tower bears N.; the wind being from W. to S.E., the course in is N. and S. with the tower.

If not able to enter, and wishing to anchor, it should be in 7 fathoms, the tower bearing N. and S.; this from May to November, when the prevailing winds are W. to S.E.

Vessels should not draw over 16 to 17 palms bound to this place, under 13 feet. The wind being from S.W. to S.E. is the highest water on the bar.

The preceding directions are good, so long as the bar remains to the southward, but it happens that every four or five years it changes, and will next be S.E. and E.S.E.

When the red flag is hoisted, it is a signal for vessels to approach the bar; if on the tower another flag is hoisted to the South, the vessel should sail farther South until it is hauled down; in like manner if a second is hoisted to the North, and a vessel is to the South, she should sail farther North. If no flag is hoisted on the tower, vessels will stand off and on, or anchor as already described.

Navigating during the night along the coast, the bottom, both to the North and South, is sand of different kinds, but muddy bottom is in front of the bar, and a vessel should keep within as short a distance as it is practicable.

N.B. The palm is about nine English inches. The signals for vessels to hoist are the same as hitherto.

When crossing the bar vessels should follow the pilot boat, and luff or fall off in the direction the flag is pointed by the boat.

*On the Winds, Tides, and Currents, between the Island of St. Catharine and the Rio Grande de San Pedro : by M. Barral.*

At the island of St. Catharine the prevalent winds are N.E., N.W., S.W., and S.E. The N.W. winds bring fine weather: and, in the winter, the S.E. are extremely rainy.

The tides in the strait or gullet have been already noticed. The sea rises in the southern basin from the South to North, and in the northern basin from North to South; so that the streams meet and accumulate near the town, in the narrowest part of the strait; and they run out in the contrary direction.

On the beaches of the Rio Grande de S. Pedro the winds from S.W., N.E., N.W., and S.E., are equally the most common; but those from the S.E. are most violent and dangerous. A vessel, surprised by a gale in this direction, on the coast, must bear away. In a gale from E.S.E. the *Emulation* was carried toward the beach of Torres for several hours, and the sea, with 27 fathoms of water, everywhere broken, ran so high as to endanger the masts. During S.E. winds the sea is always heavy, and the current along shore runs with great rapidity. The winds commonly veer to the S.E., after having blown from the S.W.; and again changing are succeeded by N.E. winds, or variable, between N.W. and W.N.W.

ST. PEDRO TO THE RIVER PLATA.—From the bar of St. Pedro to *Cape Santa Maria*, or St. Mary, at the entrance of the river Plata, the distance is 60 leagues. The coast between is generally low and flat, having within it numerous lakes and ponds.

THE CASTELHOS.—In the parallel of  $34^{\circ} 20'$  are the remarkable rocks called the *Castelhos* or *Castillos Grandes*, 9 leagues to the North of which are the *Castelhos Chicos*. Mr. Luccock says, "The rocks called Great Castelhos consist chiefly of three large masses of naked granite, about 100 feet high from the water, with perpendicular sides and roundish tops. They appear close to the shore, and, at a distance, are thought to resemble castles built on the beach; but, if there be such a resemblance at any point of view, it vanishes on a nearer approach. They are backed by low woody hills; and the beach to the northward of them, as far as the Castelhos Chicos, is flat and sandy. There seems an expanse of water toward the West, which ought to be surveyed, as probably a harbour might be found, useful for small vessels, when the wind blows hard from the south-east. More than once I have known these rocks mistaken for cape St. Mary; the cape, however, is very different, being a flat sandy point. The coast between them is low and naked, with inlets, some of which are said to afford good anchorage.

"Near to the little Castelhos is the fort of Santa Teresa, whence the road (inland) to Maldonado is very delightful."

From the Castelhos Grandes to cape St. Mary the distance is seven leagues. The cape, which is low, is described hereafter.

Between Castelhos point and cape Santa Maria is a rock, not visible, but seen breaking at intervals only, by H.M.S. *Comus*, Captain T. S. Thompson, R.N., in August, 1845, on which the French ship *Sophia*, and the British brig *Jonathan Fell* were wrecked. It is marked in the Admiralty chart as seen by H.M.S. *Ranger*, in 1827, bearing S.S.W. from the Great Castelhos Rock, 5 miles from shore. The mark to avoid it is, to keep the Great Castelhos Rock, which appears like a ship under sail, open to the eastward of the smaller or southern one, called *Palmasones Rock*.

From cape St. Mary to the East point of Maldonado the bearing and distance are S.W.  $\frac{3}{4}$  W. [*nearly W.S.W.*] 14 leagues.



## VIII.—RIO DE LA PLATA.—POSITIONS, ETC.

	Latitude S.	Longitude W.
CAPE STA. MARIA, or ROCHA . . . . .	34° 39' 1"	54° 7' 8"
Isle of Lobos; centre . . . . .	35 0 51	54 51 11
TOWN of MALDONADO: the tower . . . . .	34 53 27	54 56 36
Isle Gorriti; English tomb . . . . .	34 55 43	54 57 28
Ballena, or Whale Point . . . . .	34 53 44	55 1 31
Punta Negra, or Black Point . . . . .	34 53 1	55 14 31
—— d'Aflar . . . . .	34 47 15	55 28 31
—— das Piedras Negras de Sta. Rosa . . . . .	34 46 30	55 42 31
Isle of Flores; Light-tower on S.W. end . . . . .	34 56 19	55 55 10
MONTE VIDEO; the cathedral . . . . .	34 54 8	56 11 37
Isle Ratos de Monte Video . . . . .	34 52 8	56 13 32
Hill and Lighthouse of Monte Video . . . . .	34 53 2	56 14 57
Point Espinilla . . . . .	34 49 50	56 24 32
The Panela Reef . . . . .	34 54 45	56 24 37
Punta del Saucé . . . . .	34 25 21	57 24 58
Colonia del Sacramento . . . . .	34 28 14	57 49 14

## SOUTH SIDE OF THE PLATA.

CAPE SAN ANTONIO, North extremity . . . . .	36 19 36	56 46 8
Rio Salado; Entrance . . . . .	35 44 1	57 23 24
Hillock of Juan Jeronimo . . . . .	35 29 15	57 19 7
Point Piedras of San Borombon . . . . .	35 27 40	57 7 28
Hillock Salvador Grande . . . . .	35 19 10	57 8 23
Point del Indio, or Indian Point . . . . .	35 15 20	57 10 19
First Ombu tree of the Magdalena . . . . .	35 2 45	57 28 49
Magdalena; the church . . . . .	35 2 14	57 31 19
Atalaya Point . . . . .	34 54 56	57 42 45
Punta de San Jago . . . . .	34 50 16	57 53 42
—— Lara . . . . .	34 47 14	58 0 2
BUENOS AYRES; Mandeville House . . . . .	34 36 18	58 22 44
—— Landing place, Mole . . . . .	34 35 30	58 22 10

The RIO DE LA PLATA is one of the largest known rivers in South America, after the Amazon. It was discovered by Juan Diaz de Solis, in 1515; who navigated it as far as a small island in latitude 34° 23' S., and who, having seen on the shores some cabins, had the boldness to disembark with ten men; when they were all put to death by the aborigines. Five years afterwards Sebastian Cabot, who, from neglect, passed from the service of the English to that of the Spaniards, was sent to discover the Strait of Magellan. But, finding himself impeded in his views by the disobedience of his crews, was under the necessity of entering the River Plata, which he navigated as far as the island discovered by Solis, and to which he gave the name of San Gabriel. Seven leagues above this island he discovered a river which he called San Salvador, and another, at 30 leagues' distance, which the natives called Sarcana; where he built a fort. He then pursued his voyage as far as the conflux of the rivers Paraná and Paraguay, and leaving the former to the West, entered by the second, and had a battle with the Indians, in which he lost twenty-five men; but succeeded in routing them, taking from them treasures of silver, which they had brought from Peru; and, supposing that there was an abundance of this metal in the territories washed by the river, called it Rio de la Plata (river of silver); whereby it lost the name of Solis, first given it by the discoverer.\*

This river receives in its extensive course the water of various other large rivers. It is subject to inundations for many leagues from its banks, fertilising the land in the same manner as the Nile. The distance from the conflux of the Paraguay and Paraná to its

\* Another version of the origin of the name is given by the Spaniards, who say that Martin de Zousa, holding the *captainship* of St. Vicent, furnished Alexo Garcia, a Portuguese, with an escort to explore the wilds to the West of Brasil. By the route of the Tieté he reached the Paraguay, which he crossed, and penetrated into the interior. He returned, it is said, loaded with silver, and some gold; he halted on the Paraguay, waiting for his son, with some of his people, and sent at the same time to Brasil an account of the discovery. He was surprised by a body of Indians, who killed him and took his son prisoner. The following year sixty Portuguese, who were sent in search of Garcia, were also massacred. The Spaniards who first settled on this river seeing so much silver amongst these Indians, and supposing it to be the produce of the country, called the river La Plata.

month is about 200 leagues by the course of the river. It is interspersed with beautiful islands, and is navigable for large vessels.

The Rio Plata is at its mouth about 110 miles wide from Cape St. Antonio on the South, to Point Negro on the North. From thence, to the junction of the Uruguay, it preserves its name, being afterwards called the Paraná. Although the whole of it is navigable, it has many shoals and rocks. Between point Piedras on the South, and point Yeguas on the North, it is 46 miles wide. The coloured water which it brings down is often visible in the Atlantic about 100 miles from its embouchure. The estuary of the Plata is generally shallow, and the navigation extends along the southern shores. Vessels drawing more than 16 feet of water can seldom approach nearer to Buenos Ayres than 7 or 8 miles; smaller vessels enter the inner roads to within about 2 miles off. The navigation of its gulf, though intricate among the extensive shoals, may hereafter be rendered easy by the aid of steam tug-boats. The tides are perceptible as far as Buenos Ayres, but between point Las Piedras and point Yeguas the water is generally fresh.

The PARANÁ rises in the province of Minas Geraes to the South of the city of San Joas del Rey, in some lofty sierras, in Brasil, and flows a course for the estimated distance of more than 1000 miles, receiving innumerable tributaries, many of them navigable from the North, West, East, and South.

At about 300 miles from its mouth two falls impede its navigation. The country through which it flows is temperate and very fertile.

The Paraná, which the first discoverers considered as the chief, on account of its abundant waters, joins the Paraguay in latitude  $27^{\circ} 16'$ , just above the town of Corrientes; and their united streams take the name of the Paraná. The Rio Paraná becomes navigable for vessels of 300 tons burden at the island of Apipé, about 120 miles above its junction with the Paraguay. Below this junction it is studded with low islands, covered with wild orange trees and various trees and shrubs: the deepest channel has always from 2 to 3 fathoms of water. Before its junction with the Rio Uruguay it separates into numerous branches, which form a delta. Most of these channels are navigable for boats; that called Paraná Guazu has seldom less than  $2\frac{1}{2}$  fathoms of water, and that of Las Palmas is the next deepest to Guazu. This river and most of its confluent bring down from the countries within the tropics to the higher latitudes a great volume of water, which inundates the low districts along its banks from February to May. The waters rise in the end of December, and increase gradually to the end of April; they descend to their lowest point in July; along the lower part of the river the inundation rises about 12 feet above the lowest water level, and leaves a slimy deposit which enriches the soil.

The Paraguay river gives its name to the state. It was first navigated by Sebastian Cabot, in 1526. It rises in about  $13^{\circ}$  South latitude.

The Rio de la Plata forms the maritime division between the republics of Uruguay and Buenos Ayres, or the Argentine Republic. These unhappy countries, the scene of continual strife and warfare, have, as is well known, been under a system of blockade, from the armed intervention of the European powers. Should tranquillity be restored, and the noble resources of the countries be developed, they may hereafter assume a most important position among the nations of the world. At present all is anarchy and confusion, and, consequently, no authentic information can be given upon their actual condition.

The REPUBLIC of URUGUAY, or *Banda Oriental*, extends from the northern coast and banks of the La Plata to the southern boundary of Brasil. It is but imperfectly explored from the Atlantic to the river Uruguay. This state extends on the West along the Uruguay river about 300 miles, and on the Atlantic for about 200 miles. The average width, from East to West, exceeds 240 miles. Estimated area, 69,000 square miles.

Uruguay has generally an undulating fertile soil, with occasional broken interruptions, and is almost destitute of forest trees. The climate is temperate; it never freezes: rain falls abundantly during winter, but seldom in summer. Cultivation is neglected for pasturage. Cattle and horses form the wealth of the inhabitants. The articles of export are hides, skins, hair, horns, and jerked beef: sheep breeding and rearing is almost entirely neglected.

Monte Video is asserted to be favoured by nature, as if it had been selected for the display of fertility and beauty, and not less important on account of its geographical situation, at the mouth of the river La Plata, 40 leagues distant from the capital city of Buenos Ayres. Its climate, which has sensibly improved during the last forty years, is temperate and humid; but, as that quality is moderated by the invariably dry land winds from the N.W., because they pass through the open plains of Buenos Ayres, and by its proximity to

the ocean, the temperature of its atmosphere is the most healthy possible. In the year 1810, that province numbered a population of from 60,000 to 70,000 souls, including that of the city, which was not less than 20,000. In 1825, however, it scarcely contained from 40,000 to 50,000; that is, 10,000 in the city, and the remainder in the country. Monte Video was peopled, little more than about a century ago, by a colony sent from Buenos Ayres. At that time the country was occupied by a multitude of Indians, of whom now only remain the very few who live in the remote parts, known by the name of *Charreacas*.

The South shore of the river Plata is that of the State or republic of Buenos Ayres, a member of the united provinces of La Plata or Argentine Republic.

The REPUBLIC of BUENOS AYRES extends, it may be said, along the Atlantic Ocean from Rio Negro on the South, to the mouth of the Rio de la Plata; and along the whole southern shores of its estuary, and also along the southern banks of the Paraná as far as the Arroyo del Medio, a river which separates it from Santa Fé. The area within its boundaries is estimated at about 75,000 square miles: but this estimate is a vague calculation, and the limits of Buenos Ayres, from the disturbed state of the country, are not settled.

The northern part includes a portion of the eastern Pampas; the surface of the whole country is nearly flat, diversified by slight undulations. A very large portion of this state has a fertile soil for arable culture or pasturage. The climate of the northern portion is mild; ice is seldom formed. In summer the thermometer rises to about 90°. The North winds which prevail are as disagreeable as the sirocco of Italy. The south-western winds, or pamperos, blow furiously, sometimes accompanied by thunder and lightning. In the southern districts the climate is nearly as severe as in above 50° North latitude in Europe, but it is healthy. Both regions have sufficient rain for vegetation: the rains fall most abundantly before the setting in of the cold weather in April and May.

Cattle and agricultural products form the chief sources of wealth. The number of black cattle that pasture on the pampas is stated to exceed one million. Hides, hair, and horns are exported, and also tallow and jerked beef. The hides weigh from fifty to sixty pounds on an average. Horses are numerous, and, as well as mules and asses, are exported. Of late the breed of sheep has been improved, and wool constitutes an article of export. The cultivation of the ground was formerly so much neglected, that corn and flour were imported, but some wheat has been exported to some amount.

In the ensuing description of the coasts of the mouth of the La Plata we have extracted from the Directions of Captain *du Brossay*, of the French Marine.\*

**CAPE SANTA MARIA.**—This is a low point, difficult to make out, and you must be pretty close to distinguish the two small islets of *Paloma* and *Tuna*, which are not to be made out from the land when they bear to the W., but you can then distinguish the cape; it is a black and rocky point, with a white patch to the North, and another to the South. The best remark in this position is the direction of the land, which runs to the E. to the South of the cape, while to the North they run nearly N. and S.†

\* Instructions Nautiques sur l'Atterrage et la Navigation de la Plata, par M. Chiron du Brossay, capitaine de corvette, commandant le brick *le Cuirassier*. *Annales Maritimes et Coloniales*, Feb. 1845.

† More than twenty years ago cape Sta. Maria was described as follows, by the Honourable Captain *Bouverie*, of the British navy.

"Cape St. Mary is a low point, with rocks all about it. The direction of the coast, to the westward of this cape, becomes more westerly than at any other part northward of it. At about six miles North of it is a house, with a row of trees northward of the house, (probably a fence of high prickly pear bushes,) which is very remarkable.

"About a mile South of the house is a bluff point, with a few rocks at the foot, which is remarkable, being different from the rest of the coast, the general character of which is a sandy beach. One cannot fail knowing the cape by these marks, running down the coast near it. If you are at any distance off you will not perceive them. The water off Cape St. Mary is shoaler than to the northward. To the north-eastward of the cape, between it and the islet *Paloma*, you have 10 or 11 fathoms at a little distance from the shore.

"Ships, in general, make the land with N. or N.E. winds; therefore it is best to keep in the latitude of the cape, or a little to the northward of it, till you get soundings, as the current sets to the S.W. It is better not to make the land North of the cape: not that I believe there is any absolute danger; but the water in many places is shoal a long way off the land, and would alarm any one not acquainted with that circumstance.

"In latitude 33° 27' S., and longitude 52° 9' W., [52° 16'] is a shoal, where we found 9 fathoms of water. I believe it is a ridge running in that parallel of latitude all the way to the shore. In latitude 34° S. is tolerably high land, on which is a fortress, called *Fort Teresa*. It is a square with bastions at the angles. It has three guns in the face and one in the flank, and stands about a mile



At 6 miles to the North of the cape there is a house with trees to the North. It stands on a point easily known, because it lies on the middle of a beach of sand. It is the South point of the false bay of which the shore is of white sand. You must be at less than three leagues from cape Santa Maria to see it. In its latitude, and 9 miles off, the lead shows 11 fathoms, bottom of sand and shells.

**POINT MALDONADO.**—At 28 miles W.S.W. from cape Santa Maria you will see point Maldonado, on which stands a white house with some trees. This point is formed of rocks, darker and higher than the rest of the coast, which is white and low. You can come within three miles of it; the lead showing 8 fathoms, sand and shells, nearer the bottom is of rock.

**MALDONADO** is nearly 50 miles from cape Santa Maria. Between the two points the land is uneven. From 3 or 4 leagues off shore it seems to be formed of white downs; when the weather is clear you can see the mountains in the interior.

On the western side of the bay of Maldonado, at two-thirds of a mile from the eastern shore, is a small low island, named *Gorriti*, once fortified, but at present only the ruins remain. Under its lee is the harbour, the beach of which is exposed to a heavy surf, which renders landing sometimes dangerous, at others impossible. This island forms two entrances, but that on the eastern side of it is very narrow. On the West the coast is bold and stony, the entrance two miles broad, and to small vessels safe; but, about midway, is a rock with twenty-four feet of water upon it, on which the English ship of war, *Bedford*, once touched and laid a buoy. The anchoring ground is near the centre of the bay, and here lies the wreck of a British ship, the *Agamemnon*.

The town of **MALDONADO**, which, from the sea, has no very attractive appearance, is two miles from the shore, standing on the brow of a hill gently descending 250 feet above the level of the water. The principal buildings form a quadrangle, and include a fine new church. The common habitations are built of brick, and covered with straw. The houses in the streets issuing from the square are chiefly low, and constructed of earth.

The best landing is in a cove, under the S.E. point. Fresh beef and vegetables good and plentiful. Abundance of fish may be caught; but fuel is scarce in all the river of La Plata—1824.

Of Maldonado the Hon. Captain Bouverie has said, "The Spanish surveys of this bay lay down a sufficient depth of water for any ship between every part of the island and the main; however, it cannot be safely entered, but by small vessels, except to the westward; and you must not go farther in than to bring the N.W. point of Gorriti to bear S.S.W.  $\frac{1}{2}$  W., or S.W. by S. by compass, with  $4\frac{1}{2}$  or 5 fathoms, good strong clay.\* With southerly winds there is, in the East passage, a heavy swell; and the water, from the ground being uneven, breaks almost the whole way across in bad weather. The *Diomedé* (fifty-gun ship) passed through it to the anchorage before its dangers were known, and had not less than eighteen feet; but there are places where there is so little as  $1\frac{1}{2}$  fathom; and it is very irregular. There is a bed of rocks to the South of Gorriti; the marks for it are the Tower of Maldonado, North, and the outer part of Point del Este, E.N.E.  $\frac{1}{2}$  E.

"In the direct line of the entrance of the bay, from the westward, is a bed of rocks, where there are parts having only 3 and a quarter-less 3 fathoms. The bearings, taken on the rocks, are, N.E. point of Gorriti, E.  $\frac{1}{2}$  S.; N.W. point of ditto, E. by S.  $\frac{1}{2}$  S.; S.W. point of ditto, S.E. by S.; Point Ballena, W. by N.  $\frac{1}{2}$  N.; the hill of Pan de Azucar, just within the extremity of Point Ballena. In mid-channel, between these rocks and the island, are  $6\frac{1}{2}$  or 7 fathoms; their distance from the island is about three-quarters of a mile. There are 7 fathoms close to them, all round the western side.

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from the beach. About six leagues N.N.E. from it is a mark set up, as the termination of the Spanish [*Argentine*] territories.

"*Being in the latitude of cape St. Mary*, and having got ground in 28 or 30 fathoms of water, fine sand and shells, you may reckon yourself twenty leagues off shore; with from 15 to 20 fathoms, sand and clay mixed, you are not far off the land. When you have not seen the land before night, be sure to keep to the northward of the cape by your reckoning, to allow for the current, which sets to the southward. This is the case with the above-mentioned North and N.E. winds. With South and S.W. winds the current runs strongly the other way.

"I am inclined to think that the *strong north-easterly currents*, which are to be met with off the mouth of the Plata, when the wind is about to blow, or blowing, from the south-westward, do not extend much, if at all, beyond the bank of soundings."

\* The best anchorage, says Capt. du Brossay, is with the N. point of Gorriti bearing S.S.W., and point Ballena W. by N.  $\frac{3}{4}$  N., in  $4\frac{3}{4}$  fathoms, grey sand, good holding-ground.

"The watering place is on the main, close by the battery: the stream loses itself in the sand, except when swollen by heavy rains, and you have to roll your casks about sixty yards over the sand: the water is very good."

Between *point Ballena* and *Pta. Negra* there is no anchorage. You ought not to approach the land too close, although the dangers are near to it. The only ones that lie far off are the *banks of Solis* and *Afilor*, the first of which is 4 miles from the land, and lie S.W. of the *sierra de las Animas*.

To the West of point Las Piedras, and to the North of Flores, lies the great beach of Santa Rosa. The coast is low, and appears to consist of sand, but in reality is of rocks. Frequently have vessels, constrained to run ashore, chosen this beach, believing it to be sand, and almost always have unfortunately perished. On all this coast, with winds from the E. and S., the sea is very heavy, and the currents run strongly toward the land.

**FLORES' ISLE** lies W.  $\frac{1}{2}$  N. 56 miles from that of Lobos. On its S.W. extremity, which is 30 to 40 feet above the sea, stands a lighthouse, showing an intermitting light.\* Flores may be seen from the deck of a ship at 4 leagues off in clear weather; at night the light may be seen 5 or 6 leagues.

To the S. it is steep-to; to the N. there is a rocky shoal, extending a mile out. At W. by S.  $\frac{1}{2}$  S. three-quarters of a mile. There is a rocky shoal on which there is 23 feet water; with the exception of these banks there is good anchorage all round in 6 fathoms, muddy bottom.

To the N.W. and W.N.W., near the land, are the two banks of *Buceo* and *Carretas*. The *Nautilus* transport, on her passage to Monte Video, struck on a sunken rock between the isle of Flores and the Carretas reefs: the lighthouse on the S.W. end of Flores bore E. by S.  $\frac{1}{2}$  S., the high land about Punta Brava or Bold point, W. by S.  $\frac{1}{4}$  S. The ship passed over, having struck four or five times. Immediately the anchor was let go, and the boat sent away, and found 17 feet water on it, and  $5\frac{1}{2}$  and 6 fathoms close to it. The rock is laid down in the Spanish charts, and H.M.S. *Nereid* struck on it many years ago (May, 1846).

It is better to pass to the S. than to the N. of Flores, because in the latter passage the current is violent, and you might be obliged to anchor.

At  $11\frac{1}{2}$  miles W.  $\frac{1}{4}$  N. from Flores lies *point Brava*, which is low, and surrounded by rocks, which run out a short distance from it. This point is dangerous, and you ought to keep at a distance during the night.

**SAN FELIPE de MONTE VIDEO.**—After having doubled point Brava, at 3 miles to the N. W. by N., you find the port of Monte Video, the entrance of which lies between the *point San Josef* and that of the *Cerro* or *S.E. point*. On the first, which is a peninsula, stands the city. These two points lie nearly E. and W.,  $2\frac{1}{2}$  miles from each other.

The point of Cerro is to the S. of the Cerro of Monte Video, on which stands the lighthouse described hereafter, and 478 feet above the sea. The two points of the entrance are surrounded by rocks, but those of Point S. Josef do not extend far out. To the West of these rocks a buoy has been placed to show the wreck of a vessel, which you leave to starboard in entering. The rocks off the Cerro Point extend more than half a mile to the S., and are called *Piedras Blancas*.

*Ratones Islet*, in the N.W. part of the bay, is surrounded by a shoal; being well fortified, it would be difficult to attack the interior of the port. There are within the port two small banks, on which small vessels may touch. It has but little water throughout; at the entrance 15 to 22 feet, and within there is less. In the space before the part called Banos de los Padres there is a hole of 3 to  $3\frac{1}{2}$  fathoms not named in the chart. The anchorage is here good; and you are well sheltered by Point S. Josef, but unfortunately it is not convenient, and you are sometimes prevented from leaving by the low water. Throughout the bottom is of soft mud, so that, should a vessel ground, it will be harmless, even with

\* The light tower on Flores was first lighted on the 1st of October, 1826, and it exhibits a brilliant light, with revolving eclipsers. It stands on the highest S.W. part of the isle, whereof the height above the level of the sea is 63 palms, or 45 feet. The height of the lantern is 75 palms, or 54 feet. So that the total height is 138 palms, or 99 English feet. But in 1845 the lighthouse was plundered of its lamps under the orders of General Oribe. It was reinstated, but with a different character. The revolution then took place in three minutes, in the course of which two intervals of darkness, one of half a minute, and the other of a minute and a half duration.

A subsequent statement, however, says that the reinstated light is *not* a revolving one, and that a vessel had been lost in consequence.

winds from S.E. and S.W., which send a strong swell into the bay. With a gale from S.E. and E. the current is violent, and the sea rises rapidly. Almost always, before the wind drops, the current reflows with such force that it brings ships across the swell, and makes them ride very uneasily. In fine weather there are flood and ebb tides, but nothing regular; the tide rises 2 to 4 feet. With N. or W. gales the river lowers very much, there are instances of its having done so  $12\frac{1}{2}$  feet. You moor S.E. and N.W. The bottom is so soft that you must give a good scope in order not to draw your anchors, 72 fathoms on each. Vessels of small draught can go within; those of 14 or 15 feet cannot enter further than to bring Point S. Joseph to bear S.E.  $\frac{1}{4}$  E.; beyond that you will often run aground: those of a greater draught keep outside. There is good anchorage in 23 feet, soft mud, with the Cerro bearing N.N.W.; Point S. Josef N.E.  $\frac{3}{4}$  E.; and the cathedral N.E. by E.  $\frac{1}{4}$  E. If, during the season of S.E. gales, you should get too near to Las Piedras Blancas, you can anchor with the Cerro bearing N.N.W., the cathedral N.E., and Point Brava E.  $\frac{1}{2}$  N., but you will be further from the land, and communication with it becomes as much more difficult.

**SANTA LUCIA.**—The entrance of the river Sta. Lucia is about 10 miles E. of Monte Video; it is encumbered with banks, and only boatmen can enter it. Between Monte Video and Sta. Lucia is the *Panella* rock, formerly indicated by a buoy, which no longer exists. This is a rock nearly awash, and you are on its highest part when you bring Pta. das Yeguas and the tower of the cathedral in a line; Point Espinilla bearing N. by E. 5 miles distant. When the river is low this rock occasions a heavy surf, and which is readily seen.

We will not here speak of the channel to the North of the Ortez bank, because none but small vessels can use it. At its N.W. end it becomes very narrow, and the *Pipas* rock make it dangerous. In this channel you can get water if you are pressed, and it is fresh, higher or lower in the river according to the prevailing winds. It is seldom that it is not good abreast of *Point Jesus Maria*.

To come here you must guard against the banks of Sta. Lucia, and that of the Barrancas of San Gregorio, which extends off the coast, and is possibly the bank on which the U.S. frigate *Potomac* grounded in 1839; the least depth found on it during the three days she was on the bank was 12 feet.\* This bank is not shewn on *M. Barral's* chart.

If you ascend higher than Point Jesus Maria you must pay the greatest attention to a bank of sand lying W. some degrees N. of this point, on which there is only 13 feet water.

**COLONIA DEL SAN SACRAMENTO.**—Quitting the North channel you find the port of Colonia del San Sacramento. The entrance is rendered difficult by four islets, surrounded by shoals, *Farallon*, *San Gabriel*, and the two *Lopez*. A vessel drawing 14 feet can scarcely enter but with the wind aft. The best channel is to the S. of St. Gabriel and Farallon. Coming from the S., some miles off, you can easily distinguish these two islets and the city of Colonia, built upon the *Point of San Pedro Alcantara*.

You approach Farallon, passing half a mile South of the islet in 17 feet water, muddy bottom; then run 2 miles N.E. by E.  $\frac{3}{4}$  E., which will carry you one-fourth of a mile from San Gabriel. When the E. point of this island bears W. you will then be in 17 feet, muddy bottom. Then place the head E. Farther in the depth increases on the easterly route, and you will find 18 to 23 feet. When the lead shows the latter depth the E. point of S. Gabriel will bear W. by N.  $\frac{3}{4}$  N. Then you must bear up to N.E.  $\frac{1}{2}$  N., and proceed to the anchorage in 25 feet, gravelly bottom, one-third of a mile from the city, of which the S. point will bear E.  $\frac{1}{4}$  S., and nearly 2 miles from the point of San Gabriel bearing W.  $\frac{3}{4}$  S. There is a *fixed light* shown from the point of the city.

**HORNOS ISLES.**—The anchorage here is a quarter of a mile N.N.W. from the westernmost of these isles, in  $3\frac{1}{2}$  fathoms, muddy bottom. You can here easily cut fire-wood from the islands. A Danish frigate touched on a rock hereabout; but it is not marked on any chart, and its situation is not known.

**SOUTH COAST OF THE RIVER.**—The coast comprised between cape S. Antonio and Buenos Ayres is low, and almost entirely uncultivated. There are some trees in places, as described hereafter, and you may almost always see them before the land. There is but little remarkable, and it is very difficult to fix your position by bearings.

**CAPE SAN ANTONIO** is in lat.  $36^{\circ} 19' 36''$ , long.  $56^{\circ} 46' 8''$ . At this part the coast, which runs nearly S. and is covered with a range of sandy downs, turns abruptly

\* See *Ethiopic Directory*, p. 278.



to the W., where it is very low, and covered with bushes. The depth and bottom, which from sand becomes mud, indicate your approach to it.

From cape San Antonio to Pta. das Piedras it is 55 miles, and there are the E. and W. points of the great bay of San Borombon, of which you cannot approach the shore, because the beach is lined throughout with a bank extending 6 or 8 miles outside it, and you frequently cannot see the land at this distance.

None but small vessels can go to the *Arrogo del Tuyu*, the Rio Salado, or the *Rio San Borombon*. Between this last river and Pta. das Piedras, being 10 miles from land, in fine weather you may see in the interior an elevation, Mount San Juan Jeronimo, covered with trees, the only point of recognisance on all this coast.

**PTA. DAS PIEDRAS**, like all the South side of the Plata, is low, and a dangerous neighbour. At 6 miles off it there is less than 15 feet water, bottom of soft stone and small pebbles. This point is only to be made out by the lead and the bearings of the land. To the S. it runs W.; while to the N. it runs nearly N. and S., as far as Pta. de la Memoria. The flat of soft and rotten stone extends farther out abreast of this last point.

You may know the approach to this part of the coast by the quality of the bottom. On the edges of the bank the lead brings up often stones of different sizes. It is seldom that you can get near enough to the land to see the hillock of Salvador Graude, lying a little to the N. of Point de la Memoria.

From this point to that of Indio the coast runs N.N.W. for nearly 5 miles; the bottom continuing the same, but the small stones disappear according as you approach this latter point.

**POINT INDIO** is seldom seen, as it is so low. The pilots themselves frequently confound it with the hill of San Salvador.

The pilot Aizpurua (whose directions are given hereafter) says: "You may know Point Indio by two clumps of trees, lying to the S.E. This point is low, covered with bushes, and less even than the rest of the coast; on its extremity is a large tree. Between the clumps of trees and the point you will see an uncultivated plain. In  $3\frac{1}{2}$  fathoms, nearly 9 miles off, you may see it in clear weather.

"After passing Point Indio you will not fail to see the three first ombus which are on the lands of Sta. Magdalena. They are easily known; for, from Pt. Indio to the hills of the Estancias (country establishments) of La Magdalena, the coast is bare of trees. Before arriving at these three ombu trees you will see six or seven others in the village of La Magdalena, in the midst of which stands the church, with its two small towers, the eastern one higher than the other. Passed the church there is a large ombu, with a small clump of trees; farther off, three other ombus together, the western the largest, and the centre one the smallest. Then comes two small copses on the banks of a river, and an ombu with two houses, which point out Atalaya Point.

**"ATALAYA POINT.**—The coast is very low, with sandy beaches. It forms the entrance of the *Arogo de l'Atalaya*, where the low land ends commences the wood of Santiago de la Ensenada de Barragan, which is nearly 9 miles in extent. If you are not too far off you may see Point Santiago.

"Leaving the Ensenada you see the ombu of Point Lara, the highest on the coast; near it you see the tuft of bushes composed of thorns and peach trees, then follow the hills and village of Quilines."

**ENSENADA DE BARRAGAN.**—The port of Ensenada is in the form of a horseshoe, the entrance of which is open to the N.W. You leave, on entering, the Point of Santiago, which is low and covered with trees. At its extremity there is a small low island formed, covered with rushes and bushes, which narrows the entrance of the port. The channel leading to it is encumbered with banks difficult to clear. A pilot is necessary: the bottom is good holding ground, and there is never any sea. Vessels of 13 or 14 feet draught can enter; but the port offers no resources, although it was for a long time frequented by vessels bringing mules.

Before doubling the village of Quilines you will see the towers of Buenos Ayres, and the vessels moored in the great road.

**BUENOS AYRES.**—The city is built on the coast, elevated some 30 feet above the mean level of the river, which offers no shelter to vessels. Its two roads, formed by the banks of La Cuidad and Las Palmas, have no better anchorage than any other part of

the river, which has muddy bottom. With winds between N.E. and S.E. the sea is very heavy, and the anchors very easily drive.

The GREAT or OUTER ROAD is a narrow channel of half a mile to a mile wide, formed by the Cuidad bank and that of Las Palmas, and has a depth of 16 to 19 feet, bottom of soft mud. At its eastern entrance there is a bar, which prevents large ships of war to enter it, as it has only  $15\frac{1}{2}$  feet water on it. They consequently remain outside at 6 or 7 miles off the fort of Buenos Ayres.

LAS PALMAS.—The flat of Las Palmas is a great bank formed by the sand brought down by the Uruguay and the Paraná. The depth does not decrease rapidly on it, but you ought to keep outside of 15 feet with a vessel drawing 13 or 14 feet.

The quality of the bottom on the Cuidad bank, or that to the S. of the great road, is hard, and it is steeper than Las Palmas, and more care is therefore required in avoiding it. After passing the bar, the depth increases gradually, and the bottom becomes softer. When you find 17 feet water, soft mud, steer towards the anchorage of which the bearings are, the fort, S.W.  $\frac{1}{2}$  S.; the flagstaff of the Carcasse, N.W. by N.; la Recoleta, S.W. by W.  $\frac{3}{4}$  W.; you will then be in the best bottom, in 20 or 21 feet at low water. Vessels drawing only 13 feet water can go further in nearer the city, to the anchorage of *Los Posos*. They will have 15 feet water, hard mud, with la Recoleta S.S.W. To come to this anchorage it would be as well to take a pilot, although it is not difficult by following the ensuing instructions:—Leaving the anchorage above described, steer N.W. by W.  $\frac{1}{4}$  W. rather more than 2 miles, and then place the head to S.W., which, continued for a mile, will bring you to the anchorage of *Los Posos*.

LITTLE ROAD.—The Inner or Little Road is formed by the Cuidad bank and the coast, which is lined with a bank of rotten stone. To enter it you must draw less than 11 feet water, and take a pilot. The bottom is bad holding, and the sea is heavy in S.E. or N. winds, which seldom fail when strong to send some of the vessels ashore.

You land at the spot where stood the old mole, the remains of which cause the approach to be very difficult at times for the boats, particularly when the river is high.

Having thus described the coasts of the river we shall leave the more particular descriptions of the channels and banks, occupying its centre, to be incorporated with the necessary instructions.

### *Landfalls, or Points of Recognisance, on approaching the Plata, and Directions by Captain Barral, of the French Marine.*

These are three; the cape *Santa Maria*, the isle *Lobos*, and cape *San Antonio*.

Of cape *Sta. Maria* the position, determined on land, has been found to be latitude  $34^{\circ} 39' 1''$ , longitude  $54^{\circ} 5'$  nearly. The variation of the needle, Feb. 1831,  $11^{\circ} 7'$  E.

Although of very moderate elevation, this cape may be known by the vicinity of two islets, named *Tuna* and *Paloma*, which are separated from each other by a space of 43 fathoms in extent, and which forms a passage for small vessels drawing less than 10 feet of water; this is the entrance to a cove, sheltered by the cape and the two islets, wherein 7 or 8 vessels may lie in 11 or 12 feet.

The islet *Tuna*, the smallest and nearest to the cape, is covered with the cactus or prickly pear (or the tuna). On coming from the offing, in this direction, there will be seen an extensive sanddown, steep-to, followed by a very low beach. To the North, on a hill, is seen a group of houses, composing an *estancia*, or establishment for the rearing of cattle. Near these houses are some trees, and around are several inclosures.

The coast to the North forms a large bay of 14 miles in extent, with a point encircled by the islets *Palmarones* and *Castillos*. The islet *Palmarones*, near the point, is verdant; the *Castillos* arid and barren. The resemblance of the point to that of cape *Sta. Maria* has caused several wrecks. For this reason the bay has been called *Bahia Falsa*, or *False Bay*.

At 2 miles to the East of *Castillos* are 14 fathoms of water, bottom of sand. From the islets of cape *Sta. Maria*, at the same distance, are 10 fathoms, with sand, or sand and gravel. To the South, at 3 miles, 18 fathoms, sand; and to the S.W. 16 to 20 fathoms, bottom of ooze.

*Lobos, or Seal Island*, is not a mile in extent, but may be seen 15 or 16 miles off. It is destitute of vegetation, but is the resort of a great number of seals; whence its name. The eastern part must be avoided, because a chain of reefs extends 3 miles from it into the offing. Large ships pass safely through the channel between the isle and main, in 15 and 16 fathoms of water.

*Cape San Antonio*.—Under this name we comprehend a line of hillocks, composed of sand, extending to the East and the South, and terminating on the West by a very low coast, covered with shrubs or small trees. The position, determined from the anchorage, is given as latitude  $36^{\circ} 19' 36''$ , longitude  $56^{\circ} 42' 22''$ . Variation of the needle, Dec. 1831,  $13^{\circ} 30'$  E. The point determined is at the division between the sandhills and verdant shore. The cape is surrounded by a sandbank, which frequently breaks at a considerable distance from shore; it extends to the North and East, and should not be approached without caution.

Extensive banks, called the *ORTIZ* and *CHICO*, occupy a great portion of the central part of the river north-westward of Point Piedras, and they form three channels, of which the deepest is the middle one, between the Ortiz and Chico. The general depths in this are from  $3\frac{1}{2}$  to 4, 5, and sometimes to 6 fathoms. In the southern channel, between the Chico and shore, the depths are  $3\frac{1}{2}$  and 3 fathoms; and in the northern there are only 3 and  $2\frac{1}{2}$  fathoms. The channels between these banks and the navigation up the river to Buenos Ayres, &c., are copiously and fully described in the New Sailing Directory, so frequently mentioned in this work. We have in this present edition added that information, which we have been able to acquire since the date of the former book.

**WEATHER, WINDS, &c.**—At the entrance of the river, and at Monte Video, the most prevalent winds are the N.E. and the S.W. At Buenos Ayres, and at La Colonia, the prevailing winds are from North, N.W., S.E., and S.W.

During summer, when the weather is fine, the winds blow over all the river pretty regularly, from the East to S.E., after six in the morning to sunset. In the night the winds vary to the North.

S.W. and S.S.W. winds are known in the Plata under the denomination of *pamperos*, as coming from the pampas or plains, over which they pass.\* They clear the sky, and commonly blow after rain, or when the wind has varied from the North to N.W., and to West; and, in the summer, after a calm and very hot day. Sometimes the pampero comes on after a strong N.E. wind, while the sun is obscured by clouds, when its gust is sudden and very dangerous. It thus meets the ships which are found in the Plata or near the entrance, and is indicated by a sudden fall in the barometer, which rises afterward.

As it rains more frequently in the winter than in the summer, this wind is more common in the rough season, and then lasts for two or three days. In summer it blows stronger, but generally ceases sooner. It is then designated in the country *Turbonado*, equivalent to the French word *Tourmente*, and to the English *Storm*.

When the weather is fine, and the wind light and constant, the tides are regular on the shores; but when there is any perturbation in the direction and force of the winds, the tides become irregular, and form currents, which frequently acquire a velocity of 4 and 5 miles an hour.

At *Buenos Ayres* the sea is high with winds from S.E., and low with winds from N.W. and S.W. At Monte Video and on the rest of the North shore the waters rise with S.E. and S.W. winds, and fall with northerly ones. The differences of level on the two shores rarely exceed 4 or 5 feet; but in strong N.W. gales the rise is, at times, 10 feet.

In the months of March, April, and a part of May, the river is higher than in the other months of the year, being raised by the increase of the waters of the Paraná and Uruguay, which bring down, at that time, trees and bushes from the verdant islets of the river. This is the finest season of this part of South America, with the winds moderate and temperature agreeable. During the spring, summer, and winter, the winds are almost constantly strong, and the temperature of the air very variable.

**ANCHORAGES.**—Wherever the lead indicates ooze or muddy ground, you may drop an anchor, only taking care to be at a sufficient distance from the bank, and so as not to drive upward.†

\* See the description of the pamperos, page 6, and the remarks of Captain Beechey at the conclusion of this section.

† "A fact worthy of remark is, that almost throughout the surface of the banks in the Rio de la



With the winds in the southern quarter the anchorages on the South side are the best; but with northerly winds the opposite side is to be preferred.

Ships of war and large frigates may ascend to Monte Video; all ships drawing 16 or 17 feet of water may safely proceed to Buenos Ayres, on the one side, and to the Hornos islets on the other.

The anchorages sheltered from N.W., N.E., East, and S.E. winds are Maldonado, Monte Video, and Hornos. Those sheltered from the S.W. are the Ensenada de Barragan, and Buenos Ayres.

Small ships may also anchor at the entrance of the river of Santa Lucia, and at Colonia on the North coast, at the Rio Salado in the Ensenada de San Borombon, and at Riachuelo near Buenos Ayres on the South side.

You may anchor at Maldonado in 6 or 7 fathoms of water; at Monte Video, in the road, in 5 fathoms; in the harbour in 3 or  $3\frac{1}{4}$ ; at the isles Hornos in  $3\frac{1}{2}$  or 4 fathoms; in the road of the Ensenada de S. Borombon in 4 fathoms; near Buenos Ayres, in the road, in  $3\frac{1}{2}$  or 4 fathoms; and near the town in 2 and  $2\frac{1}{2}$  fathoms.

In the anchorages of the North coast you ought to moor during S.W. winds, and in the others with the winds south-easterly.

Of all the ports and roads the best holding ground is at Maldonado; this is oaze covered with sand. Elsewhere the bottom is of soft mud, on which the anchors drag in gales of wind. During the pamperos the isles de Hornos present very good anchorage, the sea before them being broken by the bank of Palmas.

#### *Depths of the River at the Entrance, and in the Offing.*

When you have gained the parallel of cape Santa Maria, and longitude  $51^{\circ} 54'$ , the depth, at the distance of 33 leagues from the cape, is 80 fathoms, bottom of oaze; at 25 leagues the bottom is of sand, or of oaze mixed with shells, and the depths only 35 to 25 fathoms. On advancing nearer to the cape the decrease in depth is irregular.

On the parallel of Castillos,  $34^{\circ} 24\frac{1}{2}'$ , at 33 leagues off, the depth of water is 52 fathoms, and the predominating quality of the bottom is of sand.

In navigating on the parallel more to the South, or that of cape Santa Maria, less water will be found in the same longitude, and the depths gradually diminish.

At 15 leagues from cape St. Antonio is a depth of 15 fathoms, sand; at 28 leagues from the same cape to the S.E. are 40 fathoms, similar bottom. To the North of the cape, at 5 leagues from land, are 6 and 7 fathoms: and in the direction of the English bank, on the parallel of  $35^{\circ} 11'$ , are 5 and 6 fathoms, with sandy bottom; at 5 leagues without the same, near the meridian of  $55^{\circ} 35'$ .

When turning in, on the parallel of  $35^{\circ} 20'$ , and having attained the same meridian, the bottom has been found of fine sand, the lead indicating about 7 fathoms of water. On the parallel of  $35^{\circ} 35'$ , and thence to cape S. Antonio, the bottom is of sand, mixed with shells or gravel.

From the latitude of  $35^{\circ} 20'$ , having passed the meridian of the English bank, the depth does not increase to more than 7 fathoms. On the parallel of  $36^{\circ}$  it attains 10 and 11 fathoms. To the West of the bank, on this parallel, are 5 and  $5\frac{1}{2}$  fathoms only.

At 20 leagues off from the entrance of the Rio de la Plata the water loses its blue colour, and assumes that of green tinged with yellow.

On running for the North shore, when in view of or near the land, the quality of the bottom will be oaze. When running on a parallel a little higher than that of the isle Lobos, on the North of this isle, oaze will also be found; at 2 miles South of it are 14 and  $14\frac{1}{2}$  fathoms of water; and, at 6 miles, 20 and 21 fathoms. From Lobos westward, toward Monte Video, the depths of water diminish gradually but irregularly.

In the passes, formed by the banks of hard sand, situate between Monte Video and Buenos Ayres, are from  $3\frac{1}{2}$  to 5 fathoms of water.

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Plata, when the upper stratum is a mixture of black sand and mud, the second bed, that which the anchors penetrate, is formed of clayey mud, very tenacious."—Lieut. du Périer, French Marine, Ann. Marit. et Col., May, 1842, p. 11.

*Navigation at the Entrance, and in the River.\**

The preceding description indicates the precautions requisite to be taken on approaching the different points of the entrance. On advancing, it is prudent to prefer the North coast, that only being elevated.

Some navigators have pretended that they can always judge of their position without a view of the land; by the depths of the sea, and an inspection of the divers qualities of ground gained by the lead; but this must be incorrect; for, in exploring the offing on all these coasts, soundings were frequently found similar to those off the river; and the resemblance, if depended on, may cause dangerous errors.† We therefore advise mariners not to attempt making the river without being previously well assured of their position by observation of latitude and longitude, and always to advance with precaution, on account of currents which may happen to prevail between the hours of observation.

If the wind be steady from N.E., when you approach cape Sta. Maria, that will be an advantage which will allow you to reconnoitre a greater extent of coast before entering the river: but, under other circumstances, a sight of Lobos is, in the first instance, to be preferred; as you may thus avoid being wind-bound on the North coast, and have a better chance of plying to windward. It has been already noticed that the landfall of cape Antonio is both difficult to make out and dangerous to approach, unless in favourable weather.

Having arrived to the southward of the isle Lobos, at the distance of two or three miles, the direct course for the isle and lighthouse of Flores will be W.  $7^{\circ}$  N., true, or W.  $\frac{1}{2}$  S. by compass: but, as the Plata is subject to very variable currents, such must be allowed for on approaching the North shore, taking care, at the same time, not to fall too far to the southward or towards the English bank. On approaching land you may, in good time, see the round tower of Maldonado and the high lands to the westward; and in continuing the route, at the distance of 5 or 6 miles off, distinguish a point formed of black rocks, with beaches of sand to the right and left of it. This point, called *Punta Negra*, (Black Point,) is situate at 14 miles westward of Maldonado; it is the western point of a great sandy bay, over which the high lands are remarkable, as appearing to rise, like a great white border, from the shore of Maldonado and the extreme points of the bay, *Ballena* and *Negra*.

When you are on the meridian of Punta Negra, at the distance of six miles, the isle of Flores will again bear W.  $70^{\circ}$  N., true, or W.  $\frac{1}{2}$  S. by compass. Here you will have 11 or 12 fathoms of water, oazy bottom, and may thence proceed with perfect safety.

Beyond the lands situate to the North of Punta Negra the coast makes a break or aperture, and thence becomes very low. On steering in sight of land you may now distinguish the *Hills of Aflar*, situate in latitude  $34^{\circ} 47' 15''$ : when these bear N. by W. (by compass,) and the nearest hill of Punta Negra bears N.E., you will be 27 miles eastward of Flores, in 11 or 12 fathoms of water, oazy bottom, and the isle in a line with Lobos. The hills of Aflar are insulated, and resemble two mamelons, or tetas, or paps.

On proceeding upon a course W.  $\frac{1}{2}$  S., as above, you may see, from the masthead, the light-tower on Flores, at the distance of about twelve miles. This isle, when first descried, resembles three islets; afterward the lower part gradually rises from the horizon; and at five miles off the whole comes in sight. When the sea is high, the isle, when first seen, appears in two portions only.

On coming in by night you may see the revolving light on Flores directly a-head, and may approach it to the distance of four miles; then passing it to the southward at two or three miles. Between Flores and the English bank the bottom is of oaze, and the general depth 6 and 7 fathoms. The distance between is 10 miles.

From the Isle Flores to the harbour of Monte-video, the distance in a right line is 16

\* Ships proceeding to Buenos Ayres will find pilots at Monte Video, and also in a vessel which is moored some miles to the N.E. of Point Indio. This vessel usually hoists a light during the night, but it must not be depended on.—Capt. *Chiron du Brossay*, 1845.

† Notwithstanding the opinion here expressed by *M. Barral*, another French officer, *M. du Périer*, in a subsequent publication, holds a different view. "Every navigator ought always to remember that, however favourable the circumstances may be under which he is navigating this river, he ought to pay the greatest attention to the indications afforded by the *ground log*, and more particularly to the lead, which has a just claim to the title of 'The compass of La Plata.'"—Notes sur l'Atterissage du Rio de la Plata, par *M. du Périer*, Lieut. de Vaisseau. Annales Maritimes et Coloniales.—May, 1842, p. 18.

miles, W. by S., which will lead clear of the *Punta Brava*, 4 miles to the eastward of that port. This *Punta Brava* is formed by a line of rocks projecting into the sea. One shoal, detached from the rest, requires a berth on passing. A large white house stands to the North of the point, and a smaller one is situate toward the middle of the rocks.

*On leaving Flores*, when the weather is clear, the Cerro or Hill of Monte Video comes in sight; and, in some time after, the steeples or towers of the cathedral in the city will be seen.

With the wind from the North, or the N.E., you may steer by night to the W. by S. for doubling Point Brava; but with the winds from the S.E. or E.S.E. it will be prudent to steer W.S.W. You ought, in precaution, either in one case or the other, to keep the light on Flores E. by N. or E.N.E., with an assurance that the currents will not set the ship in the direction of Point Brava.

When the Cerro or hill called Monte Video bears N.W. the point will be doubled, and you may proceed on the starboard tack, so as to gain the anchorage. A large vessel, after passing Brava, may proceed W. by S., and find anchorage in the Great Road in 5 fathoms. At a mile to the South of Point Brava are 5 fathoms of water.

In the track from Lobos to Monte Video, as in all those in the interior of the river, the rate of way must be measured by the log, and the current by a boat, in the usual manner, so as to ascertain whether it be in favour of the ship, or otherwise. The route will be modified accordingly.

As all the coast between Punta Negra and Flores may be approached to the distance of 5 or 6 miles, it is best by night to make the tacks on the starboard side. The revolving light on Flores will, in this case, be clearly seen, and you may pass to the southward of it, leaving it at the distance of 4 or 5 miles, which will lead at a sufficient distance from the English bank, in 6 and 7 fathoms.

The Cerro or hill of Monte Video is 478 feet high above the level of the sea. On it is established a fixed light, but which cannot be seen by night more than 5 or 6 miles off, when the weather is clear.

Should you attempt to make Monte Video, by passing to the southward of the English bank, you must pass this shoal, from the entrance of the river, on the parallel of  $35^{\circ} 30'$ , steering W. by S. with northerly winds, and W.S.W. with the wind southerly.

On passing over the great bank the soundings will be fine sand, then ordinary sand, afterward oazy sand, and lastly oaze, when over the bank, and on the meridian of Monte Video. You will, then, by steering North, gain sight of the mountain, which may be seen by day, in clear weather, nine leagues off.

If, notwithstanding the precautions indicated, you fall on a bottom of 5 fathoms, in passing to the southward of the English bank, by tacking to the N.W. you will soon after gain from 6 to 8 fathoms.

In thick weather, or if the true situation of the ship be uncertain, in any part of the river, you may always anchor, rather than continue your route.

The BAY of MONTE VIDEO is  $2\frac{1}{2}$  miles in extent, and its general depths are from 15 to 9 feet of water. The city, named that of San FELIPE, or St. PHILIP, is on the eastern side, as shown on the particular plan of the harbour, and stands on a peninsula. This place is the capital of the republic of URUGUAY, formerly called the *Banda Oriental*. The anchoring ground is good, but exposed to the *pamperos*, or S.W. winds, which at times raise the water 5 or 7 feet above the ordinary level. On the western side is the hill, from which the harbour derives its name, as already noticed, and on which stands the lighthouse; the other part of the coast is low. The neighbouring country is pleasantly diversified and well watered, but totally bare of trees, and without a trace of cultivation. Neither wheat nor maize is raised here; but there are plenty of melons, calabashes, figs, peaches, apples, and



*Punta Brava, or Bold Point, W. by N. by compass, 12 miles, and Monte Video lighthouse appearing over it.*



quinces ; and cattle are as abundant as in any other part of the country. The air is generally wholesome, but the winter boisterous and cold, and the summer subject to violent thunder storms and heavy rains. The exports to Europe are mostly hides and tallow ; to the West Indies jerked beef.

The best anchorage is described by Captain Heywood, hereafter ; we therefore only add that there is a shoal in the eastern part of the bay, called *El Bajo de la Familia*, and lying at nine-tenths of a mile ~~N.~~ by E. from the extremity of the eastern point, called that of *San Jose*, about which, likewise, there are several rocks. The depths between are from 15 to 9 feet.

### *Remarks by Captain Peter Heywood, of H.M.S. Nereus.*

The following REMARKS concerning the WINDS, WEATHER, TIDES, CURRENTS, SOUNDINGS, &c., in the RIVER PLATA, with instructions for navigating therein, by Captain Heywood, were first published in the year 1813, with the following preface :—

*“ Captain P. Heywood, of His Majesty’s ship Nereus, having been for three years on the Brasil station, and the greater part of that time in the River Plata, had the opportunity to observe that the loss of many vessels in that river was occasioned by the masters wanting proper directions for its intricate and dangerous navigation. Captain Heywood, on his return to England, very obligingly transmitted to the Committee for managing the affairs at Lloyd’s, his observations and instructions for the safe navigation of the Plata ; which the Committee are happy to publish (with Captain Heywood’s permission) for the benefit of all persons navigating that river.*

*Lloyd’s, October, 1813.”*

WINDS, &c.—At the entrance of the river Plata the prevailing winds, during the summer months, from September to March, are north-easterly, with tolerably clear weather overhead, but a dense atmosphere near the horizon. These winds haul gradually to the eastward as you advance up the river ; and about the full and change of the moon, strong breezes from the south-eastward are common at this season, accompanied with rain and foul weather. At Buenos Ayres, during the summer months, the S.E. winds are generally fresh in the day-time, hauling round to the northward in the night.

During the winter months, from March to September, the prevailing winds, at the entrance of the Plata, are S.W., or more westerly ; but up the river, more generally from the northward, than the southward, of West.

The winter season is the best, in point of weather, at Buenos Ayres ; for the winds being chiefly from N.W. to S.W., the water is smooth, and the communication can be kept up between the shore and the shipping with more facility. The weather is sometimes, but not frequently, foggy. Fogs are most common in the months of July, August, and September, and prevail more at the entrance of the river, as far up as the S.E. tail of the Ortiz, than above the banks.

TIDES, &c.—As it cannot be said that there are regular tides in the Plata, but currents as uncertain in their duration as they are irregular in their rate and direction, no certain allowance can be made for them ; therefore a ground-log should always be used, to know the course made good and distance run.

The tides, speaking generally, when the weather is fine and settled, and winds moderate, do not, in any part of this river, rise and fall more than 5 or 6 feet : though, at Buenos Ayres, at the distance of 8 miles from the city, we found in His Majesty’s ship Nereus, when the winds were strong at N.W., so little, sometimes, as 15 feet water ; with strong breezes from E.S.E. to S.S.W., the depth was upward of 5 fathoms ; but, except on such extraordinary occasions, we had between 17 and 22 feet of water. I have heard, however, some marvellous stories of the river having been almost dried up, across from Buenos Ayres to Colonia, during heavy westerly gales.

PECULIARITIES OF WIND, TIDES, and CURRENTS.—The river Plata has many singularities ; which I think may, in a great measure, be accounted for, from its formation being so different from any other known river. Its entrance, being very wide and very shallow, it is affected by every change of wind in a most extraordinary manner ; so much so, that a shift of wind may be predicted almost to a certainty, by observing carefully the state of the mercury in a barometer and the set of the currents, which usually shift before the wind. In calm weather the currents are generally very slack ; and then as regular, almost, as tides ; setting up and down the river alternately. When the winds are variable, the currents are

equally so; and I have known the Nereus to be current-rode four different ways in less than six hours. When the current comes in from the eastward, along the North bank of the Plata, a north-easterly wind may, generally, be expected to follow; and at the same time (should the wind have been previously to the S.E.) the mercury in the barometer will fall a *little*; but much more if the transition be quick from south-west without stopping in the south-eastern quarter.

When the wind continues in the north-east quarter the mercury is more depressed (according to its strength) than with any other wind, and there is usually, *then*, a set into the river on the North bank, and *out* on the *opposite*. Indeed, whilst the winds are between N.E. and S.S.E., the current generally runs to the westward, past Monte Video, though without much augmenting the depth of water off that place, but filling the river above the banks.

The winds between N.N.E. and W.N.W. make the water lowest: the out-set being then strongest along the South bank of the river, past the points del Indio and Memoria; but very inconsiderable along the North bank.

Before the setting in of a S.W. gale, or *pampero*, the weather is usually very unsettled, and the winds unsteady and variable in the northern and north-western boards; preceded by a considerable fall in the mercury, though it usually rises a little again before the wind shifts to the south-west; and often continues to rise, even though the wind may increase from that quarter.

Before these winds set in Buenos Ayres, the current runs up and fills the river unusually high; at the same time as strong an out-set is experienced along the North bank, which continues whilst the winds are strongest from W.S.W. to South, seeming to prove that these winds force up, from the southward, a large accumulated body of water past Cape St. Antonio, which can only find a passage out again by the North shore, where they increase the depth of the water, as well as up the river, and particularly in the shallow harbour of Monte Video. Whilst these S.W. winds blow the air is cold, and the atmosphere clear and elastic, in a degree rarely to be met with in any other part of the world. They are generally succeeded by some days of fine serene weather; the wind continuing moderate from the southward, or varying to the eastward.

I have never known the velocity of the tide or current, in the river Plata, anywhere to exceed three knots per hour; but I have heard it said, by some, that they have found it run at the rate of six or seven miles an hour!

As the winds outside the river Plata, and particularly about Cape St. Mary, are most frequently from the north-eastward and northward, except when the S.E. summer, and S.W. winter gales blow, about the times of new and full moon, I consider it, on the whole, most advisable for ships bound into the river, to get in with the land about the latitude of that cape, which is  $34^{\circ} 40' S.$ , and its longitude  $2^{\circ} 9' E.$  of Mount Video.

**SOUNDINGS ON ADVANCING TO THE RIVER.**—In latitude  $33^{\circ} S.$  the bank of soundings extends off the land full thirty-six leagues; where the depth of water, in longitude  $50^{\circ} 20' W.$ , is 94 fathoms; and the quality of the bottom dark olive-coloured mud, or oaze, as it is all along the outermost verge of the bank.\*

In latitude  $34^{\circ} S.$ , and thirty leagues from the land, the bank is steep, and the soundings decrease quickly, in standing to the westward, to 25 fathoms, twenty leagues from land.

In latitude  $34^{\circ} 20' S.$ , and about thirty leagues East of the great Castelhos rock, the depth is 63 or 64 fathoms, dark mud. In standing in for the land, between the Great Castelhos and Cape St. Mary, the water shoalens, in a short distance, from 60 to 25 fathoms; and the quality of the bottom changes to sand, which grows coarser as you approach the coast; and, as far as seven leagues off shore, is intermixed with shells. This bottom is found only in, and to the northward of, the latitude of Cape St. Mary, unless very close in with it.

To the southward of  $34^{\circ} 40' S.$  the bottom is chiefly mud, intermixed with fine sand or gravel; and if a ship happen to be set to the southward of Cape St. Mary, as she hauls in for the land, yet keeps to the northward of Lobos, she will get out of fine sand into dark mud: which is the quality of the bottom (chiefly) between Cape St. Mary and Lobos; as well as eight or nine leagues to the eastward of that island; and the depth of water between them is generally 26 to 20 fathoms.

\* The *Laurel's shoal*, in latitude  $36^{\circ} 28'$ , longitude  $51^{\circ} 30'$ , or about 70 leagues from the mouth of the Plata, has been reported as a sandy bank, with heavy breakers, seen in 1822.

In latitude  $35^{\circ}$  S., and longitude  $52^{\circ}$  W., or forty-two leagues *true* East of Lobos, there are about 90 fathoms of water, dark sandy bottom; from whence the bank of soundings takes a S.W. direction. East of Lobos, twenty-seven leagues, the depth is 25 fathoms; and, in steering in, on its parallel, the same depth, nearly, continues till very near that island. But, if set a little to the southward of Lobos, the water will shoalen even to 10 fathoms, perhaps on a hard, sandy, or gravelly ridge, that extends all the way from the English Bank, in its parallel, as far as longitude  $52^{\circ} 30'$  West; or full eighteen leagues to the eastward of the meridian of Lobos.

Thus the approach to this river cannot be considered dangerous, if proper care be taken in navigating, and due attention paid to the lead, and to the course steered.

Agreeing in opinion with Captain Bouverie, that, generally speaking, it is advisable to make the land about Cape St. Mary, I would also recommend, if the wind should be anywhere between S.E. and N.N.E., to enter the river on the North side of the English Bank, passing Lobos, on either side, according to the wind and state of the weather. There is a good passage between Lobos and the main, having 17 to 14 fathoms of water.

The island of Lobos is in latitude  $35^{\circ} 1'$  S., and longitude  $1^{\circ} 24'$  East of the Mount Video. It bears about S.W. *true* from Cape St. Mary, distance 41 miles. The variation off it was  $13'$  easterly in 1813.

When within three or four leagues of Cape St. Mary, in 17 or 18 fathoms, S.S.W. by compass, is a fair course to steer for passing outside of Lobos in the night-time; for, with the wind from the eastward, or N.E., the set along shore into the river must be guarded against. Steering this S.S.W. course, the depth of water will increase to 20 and 22: and some casts, perhaps, of 25 or 27 fathoms, (if you are set neither to the westward nor to the southward of it,) and the bottom will change, first to sandy mud, and then to dark blue mud, as you approach the latitude of Lobos. If you are set to the southward, in steering S.S.W., you will not deepen so much; the bottom will keep sandy; and when you approach the latitude of Lobos you will have no more than 19, 18, and 17 fathoms; but, if you are set to the southward of Lobos a few miles, you will have hard casts of from 16 to 10 fathoms, and may rest assured of being on the parallel of the English Bank, and may therefore make a west-northerly course *true*, till you find the bottom soften; as it is all dark blue or greenish mud, in the channel, between the foul ridge of the English Bank and the North shore, all the way up to Monte Video, in the fairway from Lobos. When off Lobos, if the weather threaten, and it should be likely to blow, a ship will find safe anchorage in the harbour of Maldonado, sheltered from southerly winds by the island of Gorriti, which bears N.  $42^{\circ}$  W. *true*, 11 or 12 miles from Lobos.

LOBOS to FLORES, &c.—Having Lobos bearing N. by W. by compass, distance 3 or 4 miles, you will have about 18 fathoms; and in making a compass course, W.  $\frac{1}{2}$  S. by ground log, (having due regard to the wind and current at the time,) you will make the island of Flores a-head of you. In this track your soundings will gradually decrease from 18 to 12 fathoms, due South of Black Point, and to 7 or 8 fathoms when you approach within 9 or 10 miles of Flores.

Though Captain Bouverie says, "You may run quite up to Monte Video, either by night or day, by making a due West course, first trying the current to make allowance for it;" and though I have frequently done it myself, yet I would not recommend it as a general rule to be followed by strangers to the river Plata. Great care and attention to the course made good, and to the soundings, are indispensably requisite in those who attempt to conduct vessels during the night, in any part of this river; and even these have been but too often insufficient to save ships from destruction. But, in merchant vessels, I fear we cannot always expect to find those qualities; and, therefore, I withhold my opinion of its being advisable for them to run in the night; neither can it be done by men-of-war without some risk.

FLORES bears, by the world, W.  $4^{\circ} 30'$  N. from Lobos, distant 52 miles. It lies nearly N.E. and S.W.; has a small hummock in the middle, and one at each end: that to the S.W. being 39 feet high. Between these the land is low and marshy; and overflowed sometimes between the central and N.E. hummock. It may be seen at the distance of 5 or 6 leagues from a ship's deck in clear weather.\*

There is good anchorage all round this island: but a reef extends in a N.W. direction from the North point about a mile. Seals and sea-lions, and various aquatic birds, resort

\* The lighthouse on Flores has already been noticed in page 191.—Ed.



to this small island as well as to Lobos: and in the months of August and September great quantities of very excellent eggs may be procured. With the wind easterly, boats may land on the western side of Flores, particularly in a small cove, very near the S.W. part of the island.

**ENGLISH BANK.**—From Flores, W.N.W., the *Carretas Rocks* (above water) are distant about 5 miles, and there are 5 fathoms between them. True South, at the distance of 11 miles from Flores, is the North part of the English Bank; on which, in that latitude,  $35^{\circ} 8' S.$ , there is about 12 feet of water. The depth of water between Flores and the English Bank is 7 fathoms all the way across, to within a very little distance of both. The English Bank, in latitude  $35^{\circ} 12'$ , generally breaks; and, with a low river, is above water in some places. Its extent, to the southward, has not yet been accurately defined; and for 70 or 80 miles to the south-eastward of it the ground is said to be foul and uneven, and has not been sufficiently explored.

Between the Archimedes and the English Bank there is a swatch of 5 fathoms of water, (according to Captain Beaufort of the Royal Navy, who explored these banks in 1807,) and as many miles wide.

The shoalest part of the Archimedes Bank, about  $2\frac{3}{4}$  fathoms, is 4 miles in extent, about North and South by compass; and there are 4 fathoms all round it. The centre of it is in latitude  $35^{\circ} 12' S.$ , and the Mount Video bears N.  $22^{\circ} W.$ , by the world, from it, distance 20 miles. Beside this bank there is a small knoll, in latitude  $35^{\circ} 14' S.$ , which is true South from the Mount Video, 21 miles; and has not more than  $3\frac{1}{2}$  fathoms of water on it, and about 4 fathoms all round it.

**MONTE VIDEO.**—Passing to the southward of Flores, at the distance of a couple of miles, you have  $6\frac{1}{2}$  or 7 fathoms, and may steer W.  $\frac{1}{2} S.$  by compass, to pass *Point Brava*, which bears true W.  $4^{\circ} N.$ , distant 4 leagues, from the S.W. end of Flores. This point is bolder to than the land to the westward, between it and the town of Monte Video, and may be passed close, in  $4\frac{1}{2}$  or 5 fathoms, at a mile or a mile and a half distance. The best anchorage for a frigate, off the town of Monte Video, is with Point Brava bearing, by compass, W. by N.  $\frac{1}{2} N.$ , the cathedral N.E. by N., and the Mount about N.W. by N., in  $3\frac{1}{2}$  or 4 fathoms, 2 miles more from the town, with the harbour quite open. The bottom is all soft mud.

The harbour of Monte Video is very shoal, having only from 14 to 19 feet of water; but the bottom is so very soft that vessels receive no damage by grounding there. Captain Bouverie says, "A S.S.W. wind, which blows right into the harbour, and causes a good deal of sea, always occasions the water to rise a fathom or more.

"In a long continuance of fine weather the tides sometimes assume the appearance of regularity; but this is not often the case. They are governed entirely by the winds. The winds from the southward cause the water to run out on the North shore strongest. Fine weather, and a N.W. wind, make the water lowest. It is usual in Monte Video harbour to have an anchor to the S.E., and another to the S.W., and to take one in abaft from the northward; for the water, forced in by the southerly wind, sometimes rushes out with astonishing rapidity; when the anchorage to the North is of the greatest service."

The MOUNT VIDEO is in latitude  $34^{\circ} 53' S.$ , longitude  $1^{\circ} 24' W.$  of the island of Lobos, and  $2^{\circ} 10' E.$  from the cathedral of Buenos Ayres.\* On the summit of this mount is a fortified building, whose base is 42 feet 6 inches by 20 feet, and now used for a lighthouse. The diameter of the lantern is 10 feet 6 inches, and its elevation above the level of the sea 478 feet.† At the base of the mount are several runs of excellent water, particularly in two small smooth sandy bays on the S.W. part of it, where ships in the outer roads may supply themselves with ease; and another on the East side of the mount, just abreast of the *Isla Ratones*, or Rat Island, adapted to ships in the harbour.

Giving the preference to the passage on the South side of Flores, especially when the wind is anywhere between S.S.E. and N.N.E. on passing Lobos, because it may be expected most probably to shift, if it does at all, round by the North to the westward; though, perhaps, not before that wind, that the in-set, together, might carry a ship up to Monte Video; yet if the wind should be to the *north-westward* at the time of making the land, it may be pretty confidently expected to shift next to the westward or S.W.; and therefore a

\* It may be observed that we give this as written by Captain Heywood.—Ed.

† Captain du Brossay says, "You must not depend upon this light; for it is in a bad state, and is frequently not lighted at all."—(1845.)

ship should not strive to beat up, round Lobos and the North channel, against an out-set, but stand at once over toward Cape St. Antonio; where by the time she could stretch across, she would most likely find a S.S.W. wind and N.W. current to run up with, along a weather-shore, to Buenos Ayres; or to Monte Video, if bound thither, passing to the westward of the bank of Archimedes, in about 5 fathoms of water; or if the mount should be seen in good time, never to bring it to bear to the westward of North, by compass, till within 5 leagues of it.

To the westward of Monte Video, on the N. side of the river, is a shoal on which the United States frigate, *Potomac*, grounded, in Dec. 1839. During the eleven days they were aground the least water they had alongside was 12 feet, the most (the day she hove off) 18 feet. The surface of the shoal consisted of a light coloured quicksand, but about 3 feet was mud and shells. It lays in the way of ships proceeding up the North side of the river to Point de Sta. Maria to water; and, from where the *Potomac* was aground, the true bearings of Sta. Maria, and the ravine of St. Gregory and St. Lucia, were N.W. and N.E.

NAVIGATION SOUTHWARD OF THE ENGLISH BANK.—In standing to the southward from abreast of Cape St. Mary, with the wind south-westerly, a ship will have from 18 to 24 or 25 fathoms when in the latitude of Lobos, and about 12 or 13 leagues to the eastward of it; and making a S.S.E. course, the water will then shoalen to 18, 16, 12, or 11 fathoms, in crossing the ridge, which is generally composed of sand, gray speckled, mixed with stones, hereabout; after which the depth increases gradually to 35 or 36 fathoms, over a sandy bottom, in latitude  $35^{\circ} 40' S.$ , and longitude  $53^{\circ} 25' W.$  In the latitude of  $36^{\circ} S.$ , and 15 or 20 miles farther to the eastward, you will deepen off the bank entirely. A ship, having got as far to the southward as  $36^{\circ} S.$ , may consider herself in a fair way for proceeding up on the South side of the English Bank; and, if the wind serve, a true West course may be made good.

In latitude  $36^{\circ} S.$  the depth of water on the meridian of Cape St. Mary is 38 fathoms; and the bottom fine gray sand, like ground pepper.

Keeping still to the westward, on that parallel of  $36^{\circ} S.$ , the depth decreases to 19 or 18 fathoms, true South of Lobos; and for 10 leagues farther you have from that to 15 fathoms. But if from the latitude of  $36^{\circ} S.$  on the meridian of Lobos, you make W. by N., or W. by N.  $\frac{1}{2}$  N. course true, you will shoalen the water to 8 or  $7\frac{1}{2}$  fathoms, in latitude  $35^{\circ} 45' S.$ , on the meridian of the English Bank. The quality of the bottom, generally, in this track is sandy, mixed with small stones; and the nearer you approach to the ridge of the English Bank it is intermixed with bits of shells, and sometimes with clay or mud.

From latitude  $35^{\circ} 45' S.$ , due S. of the English Bank, a W.N.W. true course, to latitude  $35^{\circ} 33' S.$ , will bring the Mount Video to bear North by the world, in about  $0\frac{1}{2}$  fathoms, mud, at the distance of 13 leagues from Point Piedras; and from this position the same true course may be made to raise the land about Point del Indio, if bound up to Buenos Ayres; or N.W., or more northerly, to get sight of the Mount Video; having due regard to the set of the current, up or down the river, that you may neither be horsed on the S.E. tail of the Ortiz Flats, nor on the western part of the Archimedes Bank. The bottom above this is soft mud, or clay, in the channels, fit for safe anchorage. In latitude  $35^{\circ} 30' S.$ , or thereabout, and due South of the Archimedes Bank, or some miles farther to the eastward, I have been told by some persons they have had as little as 4 fathoms, hard ground.\*

MONTE VIDEO to BUENOS AYRES.—Ships leaving Monte Video, to proceed up to Buenos Ayres, must be very attentive to the lead; and the course steered across the river must be very carefully regulated by the set of current at the time. If the weather be sufficiently clear, the mount is the most sure guide, keeping it by an azimuth compass, on the magnetic bearing N.E. by N.; and, when it sinks to an eye in the top, a more westerly course may be steered to raise the land about Point del Indio. This direction is intended to apply particularly to frigates, or any ships drawing more than 16 feet of water; because it is not advisable for them to cross the tail of the Ortiz Flats much farther to the westward than a true S.W. course from the mount will take them; for, with a low river, I have had barely  $3\frac{1}{2}$  fathoms, in the Nereus, with the mount bearing N.  $35^{\circ} E.$ , by compass, distant 10 leagues. At other times I have sunk the mount on a N.  $53^{\circ} E.$  magnetic bearing, and had as much as  $3\frac{1}{2}$  fathoms; but the river was then well filled.

\* The bank of 4 fathoms is represented on the charts as extending 8 miles N. and S. by  $\frac{1}{2}$  in breadth, between the latitudes of  $35^{\circ} 29'$  and  $35^{\circ} 36'$ .—ED.

On the south-eastern part of the Ortiz Bank, which is there hard stony sand, there was formerly part of a mast, or beacon, about 12 or 13 feet high, in latitude  $35^{\circ} 2' 15''$  S., and  $0^{\circ} 45'$  West of Mount Video; from which it bore W.  $14^{\circ}$  by the world, 37 miles. There were about 12 or 13 feet alongside of it; 3 fathoms 2 miles to the eastward of it; but not more than 10 or 12 feet, as far as 3 miles S.W. of it. Point del Indio bore true S.  $33^{\circ}$  W., 16 or 17 miles from it.

For the distance of full 17 miles to the south-eastward of the S.E. end of the Ortiz there is generally no more, and often less, than  $3\frac{1}{2}$  fathoms; the bottom tough clay, nearest the bank; and in some places farther to the south-eastward, soft mud, not more than  $3\frac{1}{4}$  fathoms.

After sinking the mount about N.E. by N., and having  $3\frac{1}{2}$  fathoms, a W.S.W. course will raise the land (if the weather be clear) about Point del Indio to the eye at the mast-head; and probably you will not have more than  $3\frac{1}{4}$ , or, at best,  $3\frac{1}{2}$  fathoms. The mount and land near Point del Indio are sometimes visible at the same time.

*Point del Indio* is in latitude about  $35^{\circ} 16'$  S., and  $0^{\circ} 56'$  W. of the Mount Video, from which it bears S.  $63^{\circ}$  W. by the world, distant 50 miles. There is little more than 3 fathoms at the distance of 10 or 11 miles, when the river is in a mean state; farther to the southward, and off Point Piedras, there is only that depth 14 or 15 miles off shore. Very great caution, therefore, is required in approaching it; and a constant lookout should be kept for the land, as it is very low, and cannot be seen farther than 12 or 13 miles, in any weather, from the deck of a frigate.

When the land is barely raised to an eye 19 or 20 feet above the surface of the water, a W.N.W. magnetic course will lead along shore, between it and the South part of the Ortiz, which is distant about 14 miles from it; and between them there is nowhere more water than  $3\frac{1}{2}$ , but mostly  $3\frac{1}{4}$  fathoms. With a high river, I have had a quarter-less 4 fathoms. The nearer the Ortiz the deeper the water.

In steering up W.N.W., with the land seen from the deck, (if clear weather,) you will have  $3\frac{1}{2}$ , or  $3\frac{1}{4}$  fathoms, (yet if the river is low, perhaps some casts of 3 fathoms,) and raise a remarkable clump of trees, called *Embudo*;\* which are much taller than the rest, highest at the West end, and lie in latitude  $35^{\circ} 6'$  S.; and in longitude  $1^{\circ} 16' 30''$  West of the Mount Video, or  $0^{\circ} 57' 30''$  East of the cathedral of Buenos Ayres. At some distance to the westward of the *Embudo* trees, there is another clump about the same height; but these, being highest at the East end, are sufficiently distinguished not to be mistaken for the true *Embudo*.

When in  $3\frac{1}{2}$  or  $3\frac{1}{4}$  fathoms, the *Embudo* trees bear by compass W.S.W.; the S.E. end of the Chico Bank will bear W.N.W. or thereabout, 10 or 11 miles from you; and you must now determine from the water your ship draws, and the then direction of the wind and state of the weather, whether you will pass between the Chico and the shore, or between the Ortiz and the Chico. I have passed up and down several times between the Chico and the South shore in the *Nereus*, lightened in her draught to 18 feet 3 inches; but I would never attempt it again from choice, now I am better acquainted with the middle channel between the Chico and the Ortiz, and have every reason to believe that the middle ground,† some charts lay down in it, does not exist.

A ship not drawing more than 15 feet may take either passage; and, of the two, ought perhaps to prefer that to the southward of the Chico Bank, particularly if the wind should be well to the southward, as she might take her soundings from the weather shore, and, keeping in somewhat more than her own draught, run up along it; and, by not deepening above 3 fathoms, would ensure being to the southward of the Chico.

**CHICO BANK, &c.**—The S.E. end of the Chico Bank bears from the *Embudo* trees N.  $32^{\circ}$  E. true, distant 10 miles, and E.  $9^{\circ}$  N. 13 miles from Atalaya church. Its latitude there is  $34^{\circ} 56' 30''$  S., and longitude  $1^{\circ} 9'$  W. of the Mount Video. This bank runs in the direction of N.  $52^{\circ}$  W. true, or N.  $65^{\circ}$  W. by compass, about 13 miles to its N.W. end, which is in latitude  $34^{\circ} 48' 50''$  S., and  $0^{\circ} 47'$  East of Buenos Ayres cathedral.

\* The *ombu* trees mentioned by M. Barral.

† The existence of a middle ground has, however, been lately proved, by the officers of H.M.S. *Pearl*, who surveyed this bank lying between the tail of the Ortiz Bank and Point Indio; see *Naut. Mag.*, January, 1844. It is not improbable that this bank may have grown up, and thus escaped the notice of former navigators, as there are several shoals existing in different parts of the estuary which are of comparatively recent formation; but see hereafter some observations upon this.



From this N.W. end, in 14 feet water, Atalaya church bears S.  $14^{\circ}$  W., distant 11 miles; and Point Santiago, forming the Ensenada de Barragan, bears W.  $4^{\circ}$  N., 14 miles from it. The breadth of the Chico does not exceed 2 miles, or perhaps  $1\frac{1}{2}$  mile, and its inner edge is about 9 miles from the shore. The water between it and the shore is nowhere more than  $3\frac{1}{2}$  fathoms, and the deepest water is along the inner edge of the shoal, at the distance of a half a mile from it, or less in some places. About midway between it and the shore there is a quarter-less 3 fathoms. On some parts of the Chico there is very little water, and within the limits I have assigned to it, nowhere more than 14 feet.

To ships drawing less than 15 feet it is only further necessary to recommend care and attention on approaching *Point St. Iago*, which forms bushy and distinct; and, when it is brought to bear to the south-westward, haul out into the stream of  $3\frac{1}{2}$  fathoms, to round outside the Spit, which runs about N.W. by compass from Point St. Iago, at least 10 or 11 miles; its extreme point, in 2 fathoms, being about 5 miles from the shore. When two remarkable trees on Point Lara are brought to bear S. by E.  $\frac{1}{2}$  E., or S.S.E. by compass, you are past the Spit. This mark will also lead a ship of that draught of water clear to the westward of the Spit, in running in towards the Ensenada.

After passing the spit off *Point St. Iago*, in  $3\frac{1}{2}$  fathoms, a W. by N. northerly course by compass will lead up to the outer road of Buenos Ayres, where any ship may safely anchor in the water she draws, if the river be low.

*Frigates, or any vessels drawing more than sixteen feet of water*, should barely raise the land about Point del Indio to the eye on deck, and borrow nearest the Ortiz: more particularly when the Embudo trees are brought to bear as far as S.W. by W. (magnetic); for, with the Embudo bearing from S.W. to S.S.W., the bottom is flat, off to 3 fathoms, full 7 miles from the shore, and chiefly hard clay. Therefore when the Embudo trees bear W.S.W. by compass, and you are about 9 or 10 miles off shore, in  $3\frac{1}{2}$  fathoms, if you have a leading wind haul to the N.W. by W., or more northerly, as may be required to clear the S.E. tail of the Chico, and you will soon deepen your water to 4 fathoms, and more, in the middle channel, between the Chico and the Ortiz Shoal. The fair course through, between them, is about N.W. by W.  $\frac{1}{2}$  W. (magnetic,) and in mid-channel the land can but just be distinguished from the quarter-deck of a frigate. When the Embudo trees bear S.  $20^{\circ}$  W. by compass, you will be abreast of the S.E. end of the Chico, and may either take your shoal soundings along its northern or outer edge, to about a quarter-less four, if the wind is southerly; or, if the wind be northerly or easterly, borrow into a convenient depth along the southern edge of the Ortiz. I believe the breadth of this middle channel may be 5 or 6 miles, and the depth of water from 4 to  $5\frac{1}{2}$  and even 6 fathoms, in the fairway, about the N.W. part of it, and abreast that end of the Chico. The quality of the ground all the way through this channel is generally soft mud, and fit for safe anchorage.

BUENOS AYRES.—The N.W. pitch of the Chico Bank being passed, and the depth of water 5 or  $5\frac{1}{2}$  fathoms, you may steer by compass W. by N.  $\frac{1}{2}$  N., or W.N., for BUENOS AYRES, taking care not to shoalen under quarter-less four, off the Ensenada de Barragan, till *Point Lara trees* bear S.S.E.

At a little more than halfway from Point Lara towards Buenos Ayres, in the *Nereus*, in 19 feet of water, and the bottom soft mud, these trees bore, by compass, S.  $17^{\circ}$  E.; the cathedral S.  $67^{\circ}$  W., and the spire of the Recoleta convent S.  $76^{\circ}$  W.; the latitude observed was  $34^{\circ} 34' 30''$  S., and the longitude, by the moon,  $58^{\circ} 2'$  West of Greenwich.\* Variation of the compass,  $12\frac{1}{2}^{\circ}$  easterly, at the distance of 8 miles from the cathedral.

P. HEYWOOD.

*Nereus, Buenos Ayres, July, 1813.*

### *Observations on the Anchorage off Buenos Ayres, by Mr. R. Thomson, M. H.M.S. Imogene.†*

On the 22nd Oct. 1836, we left Monte Video for Buenos Ayres, with a pilot on board. At Monte Video moorings are laid down for the pilot schooner, which lies with Point Indio bearing S.W. by S., by compass, 10 or 11 miles; and she generally keeps a light at her masthead. This is a good guide for vessels passing up, enabling them to shape a course

\* We now make it  $58^{\circ} 10'$  W.

† Nautical Magazine, April, 1838.

between the Chico and Ortiz banks : or in passing down the river it enables them to shape a course clear of the East end of the Ortiz, or for clearing the English Bank. In fact, if the vessel can be made, she will always give a new departure, a most desirable object in this uncertain river. On leaving Monte Video, and bound to Buenos Ayres, if the pilot schooner be not seen where and when the pilot expects to see her, there cannot be a doubt of her having left her moorings, or that the vessel is not in a proper place. At the time we expected to see her (which was midnight, and we burnt several blue lights, as well as fired several guns, in order to draw their attention) she was at Buenos Ayres.

Having missed the vessel, or being unable to find her, I would strongly recommend anchoring until daylight, and taking a departure from Point Indio, or the Embudo trees, all well described in the sailing directions for that place.

On the 23rd we anchored off Buenos Ayres, with the cathedral bearing S.W. by W., Point Guilmas S. by E.  $\frac{1}{2}$  E., about 7 miles from the shore ; and, on the 25th, shifted our berth nearer the shore 2 miles, and moored with best bower E.S.E., small bower W.N.W., 50 fathoms each ; Buenos Ayres mill bearing S.W.  $\frac{1}{2}$  S. : this is a better anchorage than where we left, as there is generally 4, and sometimes 6 feet more water, and it is full 2 miles nearer the shore.

I cannot say much in favour of the anchorage here, as it is open to all points of the compass, and at a great distance from the shore ; in fact, the communication with the shore is, at all times, very uncertain, and we are frequently three days without sending a boat ; even when they are sent there is a great uncertainty attending their return for a day or two. While we lay there (eight weeks) we found the mooring swivel of great use ; it was well tried during the heavy gales we rode out. The prevailing winds were E. and N.E. The tides are very irregular, but at times running as much as  $3\frac{1}{2}$  miles an hour. We have had from 19 to 25 feet water.

The outer and inner roads are, in fact, open roadsteads, neither of them possessing good anchorage. A strong wind from E., or S.E., blowing almost direct on land, is dangerous to those in the inner roads, and they frequently drive.

It is said that the winter season is much better for shipping than the summer, as in the latter the winds are more from the eastward. Good anchors and cables are very necessary in the river Plate ; chain cables particularly.

In addition to the difficulty of large vessels getting up the river, an adequate freight cannot be procured for them ; but vessels of 150 to 200 tons are the most likely to get employed.

Vessels discharge and take in their cargoes by means of lighters, called balandras. Should there be the least swell upon the water these lighters cannot lie alongside. Boat hire is dear : to the outer roads, 25 shillings English.

The climate, considered generally, is decidedly good. The spring months of September, October, November, and those of autumn, April and May, are the most agreeable parts of the year. December and January are said to be the hottest months in the year. During the former we have had some days of oppressive heat ; the thermometer ranging from  $69^{\circ}$  to  $85^{\circ}$  in the shade. When the heat is at the greatest, a pampero frequently follows, with its accompaniments of rain, thunder, and lightning. These winds from the W. to S.W. blow with great violence : being off the land they are not very dangerous to shipping ; but the thunder and lightning by which they are accompanied is terrific. A North wind in summer is very unpleasant, the heated atmosphere relaxing both the mind and the body ; added to this, ships are swarmed with mosquitoes and numerous other insects.

The beach of Buenos Ayres well deserves its nickname of Wapping, being crowded with sailors of all nations, grog shops, stores, &c. In no part of the world are masters of merchant vessels subject to such annoyance from the desertion of their crews. There are crimps here who conceal them in the town, or send them to the country, and afterwards exact their own price from those who are in want of sailors.

The necessaries of life are abundant and reasonable in price. The beef is good, but much inferior to English. Vegetables are at all times dear ; potatoes imported pay a duty of 50 per cent., and the growth of this invaluable vegetable is not in any way encouraged : I have known them sell at 8d. per lb. In summer, meat will not keep beyond a day. We have been obliged to throw overboard some hundred pounds of beef, slaughtered not more than twelve hours. The poultry is not of the best description. Fish is very inferior ; but plenty may be caught alongside. We had no opportunity of trying the scine.

VIEW OF BUENOS AYRES, FROM THE NEREUS ANCHORAGE IN THE OUTER ROAD.



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REFERENCES.—1, *Residencia*.—2, *S. Domingo*.—3, *S. Francisco*.—4, *Cabildo*.—5, *Catedral*.—6, *S. Miguel and Mole Head*.—7, *S. Merced*.—8, *Santa Catalina*.—9, *Socorro Chapel*.—10, *Recleta Spire*.

Fuel is scarce in Buenos Ayres, as it is not a woody country. Coals are imported from England.

The exports consist of ox hides, of all descriptions, horse hides, horse hair, wool, tallow, nutkia skins, horns, chinchilla skins, and salted beef, (the latter sent chiefly to the Havana and Brasil,) and a small quantity of silver in bars. The quantity of European goods annually imported is very great. The cargoes brought from Liverpool, of manufactured goods of Manchester, Glasgow, &c., are of considerable value, often amounting to 100,000*l*.

The state of the tides sometimes causes great delay to vessels leaving the inner roads; days, and even a week being lost at some periods.

Landing at Buenos Ayres is very bad; heavy boats cannot get near. Carts with enormous wheels are used to embark and disembark, there being seldom water sufficient to go close in; and they are, at all times, liable to serious damage from the pieces of rock, wrecks, &c. near the shore. The cartmen charge one dollar each trip.

DESCRIPTION OF BUENOS AYRES.—BUENOS AYRES derives its name from its healthy climate.—Its port is so shallow that, as shown by Captain Heywood, large vessels anchor at 8 miles to the eastward, near the spot from which the annexed view was taken. Here they discharge their cargoes into lighters, or small craft, which reach the town by the channel formed by the sands, the depths in which are from 13 to 12, 10, and 8 feet. The entrance of this channel is two leagues West [*W.N.W.  $\frac{3}{4}$  W.*] from the Nereus' or outer anchorage, and here vessels anchor in from 14 to 16 feet. To pass hence into the *Inner Road*, which is a mile North from the city, and three miles farther in, they round the sand on the larboard side; and in not less than 10, 12, and 14 feet of water. In this road the depths are from 9 to 13 feet, and this depth continues more than a mile farther to the southward, where the channel, formed by the bank, is a mile in breadth.

The city, at a distance, has a stately aspect; its situation is agreeable: but the houses, in general, are very low, having no more than a ground floor, with large court-yards, and mostly with a garden. The citadel, which includes the governor's palace, is upon the shore of the river, and forms one of the sides of the Great Square, opposite to which the town hall is situated; the cathedral and episcopal palace occupy the other two sides of the square, in which a public market is held daily. The flat on which the city stands is only from 15 to 20 feet above the level of the water. The city is regularly built, has several handsome squares, with streets straight and broad, having footpaths on each side, but unpaved in the middle, and so soft, that, in rainy weather, they are frequently impassable from ponds of mud. The environs are well cultivated: most of the inhabitants have their *quintas* or country seats, and market gardens furnish the necessaries of life in abundance.

The atmosphere around Buenos Ayres is so moist that the floors of the rooms exposed to the South are always damp. Walls having the same aspect are covered with moss, and the roofs with grass. This humidity is not, however, prejudicial to health.

In the *quintas* are raised all kinds of fruit and vegetables; among which peaches are remarkably abundant. Melons and water melons are also abundant and cheap. Other fruits are grapes, apples, pears, figs, nectarines, pomegranates, quinces,



apricots, oranges, and lemons. The common vegetables of Europe, potatoes excepted, are sold in the market, but are not cheap, as labour is dear. The chief exports are hides and tallow. The imports, manufactured goods.

Of the inhabitants, the ladies are more particularly to be noticed. The majority are brunettes, elegant in person and manners. There is nothing like vulgarity in the appearance of the poorest woman among them. All the men, in tolerable circumstances, now dress in the English fashion, and in English manufactures; but others, slightly, in the Indian mode. Both males and females have, in general, excellent capacities, but they have been little improved by education, from want of schools and liberal establishments; it has, however, been noticed by a traveller, to whom we are indebted for these remarks, that, in spite of all obstacles, many young creoles may be found who have improved themselves amazingly within a few years.

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*Directions by Captain Chiron du Brossay, of the French Marine.\**

The best position to be in for making the entrance of the river de la Plata is to look for soundings in 90 or 100 fathoms, on the parallel of Lobos, and nearly  $52^{\circ} 25'$  W. long. From thence run to the West, inclining a little to the South, so as to find soundings in 18 and 20 fathoms, fine sand, at 10 leagues S. of Cape Sta. Maria, taking throughout care to estimate the force of the currents from the direction and force of the winds. You cannot be too guarded, in this respect, against those occasioned by the winds from S.E., which run toward the coast with great violence. You have less to fear from those from other quarters, which will carry you from off the coast.

The quality of the bottom will be a sufficient indication of the effect of the current on the route followed. If it has carried you S. the depth diminishes slowly, and the bottom will be of fine sand; if, on the contrary, it has carried you N., the water will have decreased rapidly, and the bottom will have been sand and broken shells. Near to Cape Sta. Maria it will be sand mixed with gravel. If the depth diminishes progressively, and the bottom should be of muddy sand, you will have kept on the parallel of Lobos. The farther you enter the river the bottom will be more muddy.

Many navigators have advised vessels destined for La Plata to make the Castillos Grandes, but I do not agree with this; the coast is dangerous, and difficult to clear if you are taken with a gale at S.E. You ought to leave nothing to chance in entering the river, but certainly not to hesitate about getting sooner or later into the latitude of Lobos, which is the best landfall.

If, notwithstanding all precautions, you find yourself horsed to N. more than you supposed, and in 18 fathoms, sand with gravel or shells, you make the land, it will be the Castillos, and you must then bear away quickly to find the muddy bottom to the S. of Cape Sta. Maria, when the lead will clearly show your position. Near the land it will be 11 fathoms, sand; some miles South, 18 fathoms, mud; and farther outward you will find a larger quantity of sand. In 20 fathoms, sand, you will be 10 leagues off.

Leaving this depth you will steer less South, so as again to get the muddy bottom, and pass 10 miles S. of Lobos. If, in all the track, the soundings should give very different results, it need not occasion surprise; the bottom throughout is unequal, and the lead may fall into one of those holes, called here *posos*, wells.

Nearing the meridian of Lobos the bottom is of black soft mud, in 14 and 18 fathoms, according to the distance. At 10 miles S. it is muddy sand; a little farther off, of sand, and the depth diminishes rapidly as you drift onward. Leaving the English Bank you will most likely meet with soundings of 9 and 11 fathoms, very uneven bottom, sand and gravel, you will then be on the flat, the summit of which is 14 miles S. of Lobos. The charts do not show it.

Arrived at Lobos, you must estimate your drift by the ground-log, keeping a man sounding on the starboard, and another on the port side, and so regulate your sailing as to have your depths and quality of bottom with all possible exactness.

Vessels of any size can pass N. or S. of Lobos; but, except under particular circum-

\* Instructions Nautiques, par M. Chiron du Brossay, Capitaine de corvette. Ann. Marit. et Colon. Feb. 1845.

stances, they ought never to go to N. Leaving Lobos in 18 fathoms, to pass to the S. of Flores, you steer so as to keep in muddy bottom, and from time to time come to port to pick up the muddy sand on the S. edge of the channel. By this means you will be sure to keep in a good direction, the depth lessening from 18 to 6 fathoms. In 12 fathoms you will be on the meridian of Punta Negra. Before arriving in 6 fathoms you will have seen Flores Isle, and, if by night, the revolving light on it. You ought to take into the account the effect of the current, and also remark the quality of the bottom. In the channel it is mud, and the bottom of soft mud is a certain sign of being away from the English Bank. When you have made Flores, or its light, it is very easy to take the passage between it and the English Bank.

The direction to follow from Flores to Monte Video depends on the current, and the distance from Flores. You must keep a good distance off the rocks which surround Point Brava, by not coming into less than  $4\frac{1}{2}$  fathoms. Either by night or day, a bearing of the isle or light of Flores will assure you of the direction of the current, which is frequently violent. When you bring the Cerro of Monte Video to bear N.W., then anchor.

Vessels frequently prefer to pass to the S. of the English Bank. After having made Lobos, steer upon the great bay of San Borombon: in this route guard against the French Bank. You will cut the ridge of sand on the parallel of the English Bank, the nature of the bottom and the depth will tell you its situation.

As soon as you find the muddy bottom of the Bay of San Borombon, you must steer to make the shoals off Point Piedras, passing to the S. of the English Bank, and also of those of the Medusa and Narcissus, which are little known.

From Point Piedras you must bear up for that part of the river whither you are bound. If it is to Monte Video, you should go to the shoals of Point Piedras, and run for the port when you have  $5\frac{1}{2}$  fathoms, muddy bottom. You should make sufficient allowance, in case the downward current should horse you on to the Archimedes Bank. This may be avoided by the lead, the bottom becoming of muddy sand and mud; you should not go in less than  $4\frac{1}{2}$  fathoms. As soon as you make the Cerro, you will then know how to proceed.

If you are bound for Buenos Ayres, you make the soundings off Point Piedras in 15 to 20 feet, bottom of soft stones and rocks; you then run towards Point Indio, keeping on the edge of the soft stone bank, in 16 to 17 feet water.

MONTE VIDEO TO BUENOS AYRES, by the MIDDLE CHANNEL.—The following directions are by *Don Benito Aizpurua*, a pilot, with additional remarks by *Capt. Ch. du Brossay*.

Leaving Monte Video, steer S.W. 30 miles; then W.S.W., so as to make Point Indio. Being in 18 or 20 feet water, in sight of Point Indio, steer to the N.W. by W. so as to make the Ortiz Bank without fear, for the depth diminishes gradually. From 18 to 20 feet off Point Indio, with the head to the N.W., the depth increases to 25 and 27 feet; and when it falls to 16 you are on the Ortiz. Then from this steer W. so as to make the Ensenada de Barragan, which is remarkable by the two points of Santiago and Lara. The first is known by an extensive wood, and the latter by the great ombu tree near it.

From 16 feet on the Ortiz the depth increases regularly on the route to 30 and 35 feet, according to the state of the river. The depth of 33 indicates the neighbourhood of the Ensenada, observing that, when you can see this, the North coast or Colonia may be seen. Having passed the Ensenada you will see the village of Quilines on a high hill, which you may know by a mass of ombus, and before this you will have seen the towers of Buenos Ayres. In case there are no vessels at the outer road you cast anchor, when the church of the Residencia, the southernmost in the city, bears S.W. 6 or 7 miles.

Before losing sight of the Cerro of Monte Video you ought to ascertain, by a bearing, the direction of the current, so as to make proper allowance for it. If, during your run of 30 miles to the S.W., you have less than 18 feet, you are horsed on to the S.E. point of the Ortiz, of which I could cite numerous examples. If, on the contrary, the lead gives more than 24 or 25 feet, you are drawn into the channel to the S. of the English Bank.

In the run of 15 miles to the W.S.W., you will not find less than 17 feet water. If you find more than 20, and the nature of the bottom shows that you are abreast of Point Piedras, you must round for some miles the bank of rotten stone on the coast, and take the position indicated in Aizpurua's instructions above, before running to the N.W. If, on this N.W. route, the current bears upon the Nuevo Bank, the depth will lessen a little, and the bottom of mud will become of sand. You will know by your distance that you are on the Nuevo and not on the Ortiz Bank. You must then place the head W., until you have

doubled the N.W. end of this; then again come up N.W. to make the Ortiz; the diminished depth and the hardness of the bottom will show its edges.

It may be that, instead of the Nuevo, you may be carried on to the Chico Bank, which you may know by the uniformity of the depths, which do not exceed 19 or 20 feet. You must then steer to the N. so as to find the depths of 28 to 30 feet in the middle channel. If you think that you are very near to the Chico Bank, you must bear eastward in your route. When you have again found depths of 28 to 30 feet, you may then bear to N.W., as before, and from the edge of the Ortiz proceed direct to Buenos Ayres.

**THE SOUTH CHANNEL.**—Any vessel, drawing above 15 feet, ought not to pass through the S. channel. It is also necessary to have a favourable wind, for you cannot beat through. Under many circumstances, it would also be better to return than to anchor in it.

Leaving Point Indio steer N.W. by W., to make the three first ombus on the hills of Magdalena, keeping in 17 and 19 feet. The bottom of mud will be found harder the more you hug the land, and it will become muddy sand or of soft stone.

After having run 7 or 8 miles, after leaving Point Indio, the lead probably will find a stone bank on which there is 18 feet; you will be to the S. of the N.W. point of the Nuevo Bank, or you will have already passed it. In coming down as well as ascending the river, the soft stony bottom is an excellent guide for vessels.

Before you pass the three ombus you will see the village of la Magdalena, the church of which is a mark for the South Channel. In 20 feet, hard bottom, at the S.E. point of the Chico Bank, this church will bear S.S.W.  $\frac{1}{2}$  W. The entrance to the channel on this side is narrowed, and the depth is rather less. You will not find the depth of  $3\frac{1}{2}$  fathoms, except N. and S. of the Chico Bank. You must keep nearer the coast than the bank. You will be out of the channel when Atalaya Point bears S.W.  $\frac{1}{2}$  S.

In quitting the South Channel you will run on in  $3\frac{1}{2}$  fathoms, passing to the N. of the Santiago and Lara Banks. After this you will find less water than has been stated as in the middle channel.

From what has been said it will be seen that the greatest depth is over mud, and diminishes as gravel or sand predominate. Thus, if you are obliged to beat from Lobos to Monte Video, the lead will tell your position.

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### *Directions for beating from Point Indio to Buenos Ayres, by Don Benito Aizpurua.\**

1. Being between Point Indio and the S.E. point of the Ortiz you can run from 18 feet to 18 feet on either side, upon the bank or upon the coast.

This is with vessels drawing 15 feet, but with those which draw but 12 feet you can keep on to 15 feet, as neither the Ortiz or the bank of soft stone lining the shore are steep-to.

2. This manner of proceeding can be kept from Point Indio until you are up to the S.E. point of the Chico Bank.

3. When you arrive in the neighbourhood of the Chico Bank, the six or eight ombus of the village of Magdalena will serve as a mark.

4. As long as the ombus bear S.S.W., by compass, you can tack without fear, as we have just shown.

5. In running these boards you will find there is a greater depth by the side of the Ortiz, as shown by the chart.

6. When the six or eight ombus of the Magdalena lie to the S. by W. you have entered the channel between the Ortiz and Chico Banks.

7. You can sail with confidence toward the shore, for you may see the ombus from the masthead of an ordinary vessel before you arrive at the Chico Bank.

\* Don Benito Aizpurua was selected by the government to place several large buoys upon the edges of the channels leading to Buenos Ayres, which task he effected with much skill and judgment; but his labours were soon nullified, as these useful monitors were carried away by the bad weather. Don B. Aizpurua also assisted M. Barral, in the *Emulation*, during his survey of the river, in 1830-2.



8. In 18 feet water on the edges of the Ortiz, you cannot see the ombus: but, in clear weather, from the middle of the channel between the two banks you may descry them from the upper part of the rigging.

9. Between the S.E. point of the Chico and the Ortiz you will not find but 23 feet water, when the river is low.

10. Between the Ortiz and Chico, after having passed the centre of the latter, which is 9 miles long, the lead shows 35 feet.

11. From this depth of 35 feet, steering W.N.W., by compass, you will have doubled it when there is but 23 feet.

12. From this point, steering W. by S., the depth increases again to 35 feet, and then you will see Ensenada.

13. When the depth diminishes to 30 feet, and when you have well made Ensenada, place your head W. by N., and this will take you direct to the outer road of Buenos Ayres.

When you have come up between the Ortiz and Chico, in your boards towards the Ortiz, you can run to 20 feet without fear; and when you approach the Chico, when it is lessened to 23 feet, you should veer as this bank is very perpendicular.

Having passed the Chico Bank you can tack in 18 feet on either side, as between Point Indio and the Chico.

The channel between the banks is preferable to that near the land, as it is wider, and the depth greater.

From the S.E. of the Chico Bank to the Ortiz the distance is 9 miles, and from the N.W. point of the same bank it is 7 miles.

Aizpurua does not mention the Nuevo Bank, although it was already formed when his directions were printed. Few pilots know of its existence, although it is now better known: several vessels have touched on it.

From fear of meeting with it you will do well not to prolong your boards to the N., and keep more upon the stony bank of the coast than farther out; at least if the height of the river, and the draught of the ship will not allow you to cross it, and run on as far as the Ortiz.

When you have the depth of 18 feet on the flat of stone, and you are certain of having doubled the N.W. point of the Nuevo Bank, there is nothing to hinder you from tacking between the coast bank and the Ortiz, according to the size of your vessel; without, at the same time, coming into less than 18 feet water on the bank, for fear of getting into one of those cuts in it previously mentioned.

If there is a downward current, you must anchor, for you will gain nothing by beating against this current.

After you have passed the bar of the great road of Buenos Ayres, your boards will be short; scarcely will you have put the ship about before you must prepare to do so again, having at least, as yet, one foot water under your keel.

## NAVIGATION EASTWARD OF THE RIVER PLATA.

In CAPTAIN BEECHEY's remarks on the passage of H.M.S. *Blossom*, from *Rio Janeiro* to the *Falkland Islands*, 1825, are the following observations on crossing the parallels of Rio Plata, and encountering the pamperos, &c.

"This passage was unusually long, owing to the prevalence of contrary winds, particularly in the vicinity of the river Plata. We sailed from Rio Janeiro on the night of the 15th of August, with a westerly wind, the *Corcovado* and *Sugarloaf* capped with clouds. On the 16th the wind shifted to the eastward; and toward night a gale suddenly arose, accompanied with thunder and lightning. The flashes of lightning passed frequently between the masts; and, latterly, the electric fluid settled upon the mastheads and topsail-yard-arms, and remained there for fifteen minutes. We had been warned of the approach of this storm by the appearance of the sky and a few flashes of lightning, and reduced our sail in time, otherwise it might have done much mischief from the suddenness and violence with which it commenced. This breeze went round to North and N.W. to W. by S., then to S.E., S.S.W., N.W., southerly again, and S.E., East, and S. by W., until the 25th, the weather being more gloomy, and the winds light or of moderate strength.

"On the 25th, in latitude  $36^{\circ}$  and longitude  $48^{\circ}$  W., we encountered the first *pampero*, which came on with a heavy squall from the S.S.W., attended with rain. For nine days we had these winds; during which time we could seldom carry more than the maintop-sail, in consequence of the violence of the squalls. At the commencement of this bad weather the squalls were harder and more frequent than toward its termination, and were accompanied with rain, hail, and sleet. Toward the close of it the general strength of the wind was increased, but the violence of the squalls was comparatively moderate, and the intervals longer. Still these gusts of wind gave no warning, and, indeed, during the whole period, excepting in the squalls, there was a clear blue sky, and apparently fine weather. From the commencement of these *pamperos* to their termination we had a reduction of nineteen degrees in the temperature of the air, and of fifteen in the surface of the sea. The remarks of Captain Heywood will be found very useful in anticipating these squalls.

"To these *pamperos* succeeded a calm; then light and moderate breezes from N.W., E.N.E., North, E.N.E., S.W., S.E., with cloudy weather, until in latitude  $48^{\circ}$  S., and longitude  $54^{\circ}$  W., when we fell in with a W.N.W. wind, which the next day carried us into the soundings off the Falkland Islands."\*

To the preceding we may, with propriety, add:—

THE PASSAGE OF H.M.S. CONWAY, Captain BASIL HALL, from RIO JANEIRO to BUENOS AYRES, in October, 1820.

This passage was made in less time than it usually occupies. We passed the *Sugarloaf* at the entrance of Rio, about four o'clock in the afternoon of Saturday the 14th of October, 1820, and were off *Maldonado* at the same hour on that day week, viz., the 21st, and anchored off Buenos Ayres at four in the morning of Monday the 23rd; thus completing seven days from Rio to the Plata, and eight and a half from Rio to Buenos Ayres.

The wind was moderate from E.S.E. as far as latitude  $26^{\circ} 46'$  S., when it drew to N.E., and blew fresh; it then hauled gradually to the northward. In  $33^{\circ}$  it fell light, and drew to the westward, South, and so round to the eastward. On approaching the river it came to the southward again; after entering which the wind came from the S.E., and afterward N.E. and East, moderate and fine weather.

An American frigate which sailed from Rio a fortnight before us met with hard S.W. breezes, and arrived only two days before us.†

Two years afterward, the *Conway*, then returning to Rio, was off the Plata, between the latitudes of  $40^{\circ}$  and  $30^{\circ}$  S. for thirteen days, contending against northerly and N.N.W.ly winds, between longitudes  $40^{\circ}$  and  $50^{\circ}$ . This was the latter end of August and beginning of September, 1822; and it may be useful to remark that, on this occasion, the winds invariably followed the course of the sun; that is, from right to left, or what is technically called, in the northern hemisphere, against the sun. This change occurred three different times; the wind drawing from N.E. to North, then to N.W. and West, and so to S.W., and again by S.E. to N.E. and North. Upon two occasions it shifted to S.W. from the northward, without any warning, and blew fresh.

\* It has been stated that sometimes such swarms of flies are blown off the coast, about the entrance of the Rio Plata, as to resemble a small dense black cloud, which is invariably followed by a *pampero*.

In the eastern seas swarms of large flies sometimes come on board vessels, and a typhoon is sure to follow. An eye-witness said, "There were three Indiamen of us in company; typhoon-flies flew on board our ship, the weather was very fine, and no appearance of a gale, and all of us were surprised when our old experienced captain immediately set us to work to send down royals, top-gallant masts, &c., which we had scarcely accomplished when a tremendous hurricane came on. We were obliged to keep the ship right before it for a long time. When it came on our commander was on the fore-castle, giving some orders, and the force of the wind was such that he was unable to return to the quarter-deck for about four hours.

"The other ships suffered severely, losing topmasts, &c., but we escaped, owing to the experience of our captain, and his prudent measures, which commenced as soon as ever the flies were noticed."

Mr. Luccock says, In the latitude of  $34^{\circ}$  South, and fully 200 miles from land, we found the rigging covered, one morning, with a multitude of small insects; some of them very beautiful. We had no doubt of their being brought from the land by a N.W. wind, which then began to blow fresh, but wondered at the distance to which they had been wafted. They were the precursors of one of the most durable gales which I ever experienced; it lasted ten days, with more or less violence, during which we drifted to  $36\frac{1}{2}^{\circ}$  South.—*Luccock's Brasil*.

† The *Conway* crossed the parallel of  $30^{\circ}$  S. in about  $47^{\circ} 40'$  W.—ED.

## SECTION V.

## ROUTES FOR RETURNING FROM BRASIL TO EUROPE.

As the *land breezes* of Brasil are nearly the same along the whole of the coast, and during the greater part of the year, the day and hour of departure may be always fixed. It has been noticed that these breezes rise during the night, and are generally very fresh during the early part of the day; as they continue for nine and ten hours, you have, consequently, every advantage for preparation, and for standing off to a distance from the coast, free from all local obstacles.

The Baron Roussin has treated rather copiously on the routes to be adopted in sailing from the different ports; but his rules appear to be such as will naturally suggest themselves to the mind of a seaman, on a consideration of the prevalent winds, currents, &c.

The strength of the N.E. winds often force vessels, when bound from ports *South of Cape Frio*, on their return to Europe, to keep close on the larboard tack for twelve or fifteen days, and descend to the S.E. or S.S.E. to the parallel of 28, or even of 32 degrees.\* In advancing from the southward you ought to attain the meridian of, and sight the island of Trinidad, in 20° 31' South and 29° 19' West; then tack about and leave the island on the starboard side, as you cannot always double the projecting points on the eastern shore. On proceeding hence, northward, the winds will be found nearly approaching East and S.E., and so facilitate the proper route. By acting in this way it will rarely happen that you cannot pass to windward of the isle Fernando Noronha, and cross the line between the 28th and 36th degrees of longitude (West of Greenwich,) or, if circumstances require it, one or two degrees more to the West.

On *quitting Pernambuco*, or the points in its vicinity, you may not always be able to get to the northward on the starboard tack. The direction of this coast inclines from the North to the West, and the winds are mostly from the eastward; but, at the same time, you may gain a good offing in directing your course to the northward. Should, however, the winds not permit you to proceed freely on this route, it will be preferable to make a long board to the S.E., and then act according to circumstances.

Between POINT TOIRO (*the N.E. extremity of Brasil*) and the isle of *Maranhã*, the general direction of the coast is W.N.W., and there is no difficulty in proceeding along it with the prevailing winds. During five-sixths of the year, these winds blow from E.S.E. to E.N.E., and it is easy to go to the North, and even to gain a little to the East, by governing the starboard tacks.

In *quitting the port of Maranhã*, and proceeding thence northward, a favourable wind is required, and care must be taken to avoid the dangerous shoal of *Manoel Luis*, described in page 81. By anchoring for thirty hours, near the edge of this shoal, it was found that the tide sets regularly six hours each way, the flood to the S.W., and the ebb to the N.E., nearly with the same strength. The rise and fall was 12 feet. These remarks have been confirmed by others made by Lieut. Lartigue, in a vessel called the *Lyonnaise*, in 1826, who found the alternate streams to run at the rate of one mile an hour.

The combination of tide and current hereabout renders it necessary to be very circumspect when entering and leaving the Bay of S. Marcos, or in sailing between it and the shoal of Manoel Luis, as the streams may be very variable.

\* RIO JANEIRO TO CAPE FRIO, &c.—Mr. Wood says, Between the months of September and March, when the northerly winds prevail, as well as a current to the southward, it is advisable, after doubling Cape Frio, to stand to the eastward, into the tracks of the *Indiamen*, endeavouring, if possible, to keep within the tropic; as it is of little use to go round, unless you can weather the land on the other tack, as the wind always heads you as you draw in shore, besides a current on your weather bow.

The *Tartar* was (by observation daily) affected by the *equatorial current*, between the latitudes of 0° 8' N. and 4° 53' N. (longitude 24° 30' W.) in a period of three days, 87 miles N. 44° 27' W. *true*; equal to 29 miles per day. Nov. 1825.



## APPENDIX.

COMMERCIAL REGULATIONS OF RIO DE JANEIRO, AND OF OTHER  
BRASILIAN PORTS.

*Regulation relative to Brasil wood.*—The exportation of Brasil wood from the ports of Brasil has always been an exclusive privilege of the imperial government; but, as abuses have occurred, and some vessels, perhaps through ignorance of the Brazilian laws in relation to the trade, have exported on private account the said article to foreign ports, it is made known, to those whom it may concern, that the laws of Brasil forbid entirely the exportation of the article by private individuals, and impose a fine of 30 milreis (fifteen dollars) a ton on each vessel that may take the wood by contraband, from any part of the empire, to foreign countries. The fine will be enforced even after the departure of the vessel from Brasil, for which purpose the government has taken all necessary measures to arrest the aiders and abettors in the clandestine shipment.

*Tonnage Duties of Brasil.*—Art. 1. After the 11th November, 1844, the anchorage dues upon Brazilian and foreign ships in foreign trade will be reduced to 900 reis, and the dues upon the Brazilian coastwise vessels to 90 reis a ton, for what period soever they may remain in port.

Art. 2. Ships arriving in ballast, and sailing with cargo, and arriving with cargo, and sailing in ballast, will pay one half the dues—entering and clearing in ballast one third dues.

Art. 3. Ships entering for provisions, or in *Franquia* to try the market, whether in ballast or with cargo, will pay one-third.

Art. 4. Ships entering under average, or in distress, will pay nothing, unless they discharge or take cargo; being allowed to discharge the necessary cargo for the payment of the expenses incurred.

Art. 5. Ships that have paid in any port of the empire the anchorage dues of the articles 1st, 2nd, and 3rd, arriving in another port in the same voyage, pay nothing, excepting taking cargo, and then have to pay the difference of the dues.

Art. 6. Coastwise vessels, trading between the ports of the empire, will pay one-half the dues when half the crew be composed of Brazilian citizens; and will pay nothing if, besides this circumstance, they be employed in the coast or in the high sea fishery.

Art. 7. Vessels of countries that will charge more dues upon Brazilian tonnage, or port dues higher than dues paid by their own vessels, are subject, in the ports of Brasil, to pay one-third more of the dues established, or to be raised to the same difference imposed by the said countries upon the Brazilian vessels.

LUIS HINRIQUE FERREIRA D'AVILA, Consul General.

*To guide Owners and Captains of Vessels bound to the Brazilian Ports.*

To despatch a vessel at the office of the consulate of Brasil are necessary:

Three copies of the manifest, one retained at the customhouse.

The invoice of all and every shipper.

Bills of lading.

Bill of health.

List of crew; and passengers, if any, must take passports.

It is also necessary to give three days' notice, at the consulate, of the intended departure of vessels, for any port in Brasil.

Art. 146. The master of any vessel sailing with a cargo for any of the Brazilian ports ought to bring two copies of his manifest, exactly alike, which must contain—

Sec. 1. The name, description, and tonnage of the vessel.

Sec. 2. The master's name, with the date at the end, and his signature.

Sec. 3. The port where he took the cargo, stated in the manifest.

Sec. 4. The port or ports said cargo is bound to.

Sec. 5. The marks, countermarks, number of packages, and their descriptions, such as bales, boxes, chests, pipes, half pipes, barrels, tierces, &c.

Sec. 6. A declaration of the quantity and quality of the merchandise in each package as near as possible, or of several homogeneous packages with the same mark, and of the goods stowed loose.

Sec. 7. The names of the shippers and consignees, or whether they are to order. Everything must be written in words at length, except the numbers of the packages, and on entire sheets of paper, not pieced to one another.

Art. 147. When a vessel has taken cargo at more than one port, she ought to bring a manifest from each one of the ports whereat she may have received shipment.

Art. 148. At the end of the manifests, the master shall state the number of passengers, both cabin and steerage ones, and make all other declarations he may deem necessary.

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The PORT REGULATIONS of RIO JANEIRO, in 1825, were as follow:—

When a vessel arrives, a military guard is put on board, the different government boats visit, and the customhouse boat calls alongside, to know whether the vessel is bound to Rio, or has only put in for supplies. If bound for Rio, a strict search is made in the cabin and forecastle, and all parcels found are carried to the customhouse, whence they may be taken, after paying the duty. The hold is then sealed up, and the captain allowed to go on shore to enter, having previously sworn to his manifest or cargo book and signed a declaration, in Portuguese, of his detention. If his manifest clears the vessel for Rio, she must be entered in full, and pay duty on all her cargo; if for any other part, a time is allowed her to get supplies, and her hatches are not sealed. If she has a cargo to land, she is sealed, and enters in *franguia*, which allows the privilege of landing and selling part of her cargo, only paying duty on the part landed.

If, by any mistake in the interpreter, the captain declares, in the declaration in Portuguese, that he is bound for Rio, although his manifest may show that his vessel is bound to another port, there is difficulty in getting entered in *franguia*. Vessels are allowed but one discharge a day, and often are prevented from discharging, by want of room in the customhouse, or want of guards to attend to the discharge. After a lighter is loaded, the hatches are immediately sealed, unless permission is previously given to the officers to remain, to allow the cargo on board to be stowed, and the vessel's hold to be put in order; for such courtesy a fee is exacted, which, if not given, much trouble and inconvenience may arise, as they are arbitrary in their office, and no redress can be had by complaining; the word of the lowest guard having more faith given to it than that of the most respectable shipmaster. Three officers are sent on board to attend to every discharge; and if one of them fails in appearing, no discharge is allowed.

Vessels cannot begin to discharge before day-break, and the captain is bound to send his boat in time to take off the officers from the shore, or furnish another for that purpose. The expense of the guards at each discharge is about 4 dollars 80 cents; that is the customary fee to secure their civility; a practice of long standing, though pretended to be denounced by the judge or chief of the customhouse, and which merchants cannot avoid paying without exposing themselves and their business to difficulty and inconvenience. All lighters with merchandise must be at the customhouse by seven or eight o'clock in the morning; and, as vessels lie off in the bay, small discharges only can be made at a time. Vessels loaded with dry goods are often delayed from ten to fourteen days between each discharge, without an opportunity of discharging, or in waiting for their turn.

Goods, although manifested, if found in the forecastle, or anywhere out of the hold, or not under seal, are liable, by the regulations, to seizure.

AN INTELLIGENT CORRESPONDENT (*Mexicano*) of the *Nautical Magazine*, has given the following REMARKS ON RIO JANEIRO:—

“Approaching the entrance of the harbour of Rio Janeiro no difficulty is met with, in ascertaining the vessel's position, from the very conspicuous land in the neighbourhood of the harbour. The Sugarloaf Hill, on the left hand of the entrance, forms the most conspicuous object, and renders the approach easy, and without danger. The regular winds in the harbour, and for several miles outside, are a land and sea breeze, the former giving place to the latter, at from 9 to 11 a.m. after this time, therefore, there is generally a fair wind for entering. After passing the Paya and Maya Islands, in the entrance two forts



will be seen; one on the starboard hand in entering, called Santa Cruz, the other called Fort Sagea, situated on a small island almost immediately opposite. Passing between these two forts the harbour regulations require the vessel to be carried within hail of Santa Cruz, in order that the master may, in passing, give the name of the vessel, the port from whence she came, and the number of days' passage. These questions being answered, and passing on upwards towards Fort Vilganhon, situated about halfway between the entrance and the city, and on the larboard hand, it is necessary to shorten sail in time, as the vessel must be anchored previous to coming abreast of this fort, otherwise guns will be fired, for each of which the offenders must pay. While anchored here the vessel will be visited by two boats, one from the fort, the other from the customhouse; which visit being passed, the master may proceed with the vessel to the customary anchorage, above the Island of Cobras, (which is easily recognised on the larboard hand from the plan on the chart,) and then anchor among the vessels, mooring as soon as possible, and with a short scope of cable, the holding ground being good, and no risk of driving. If the vessel has a stream chain she will be quite safely moored with one bower and the stream anchor, which is easily weighed.

There are two ways of discharging cargoes in Rio Janeiro; one by putting the vessel on a list at the customhouse, for her turn at the wharf, and the other by discharging in lighters, the vessel paying the lighterage. As regards dispatch, from all I could see, the former plan is the best, although far from good. Generally speaking, a vessel lies in harbour ten days previous to being in turn. She may then be hauled alongside a small jetty at the customhouse stores, inside the island of Cobras, and during fine weather discharge cargo, being allowed to work, on an average, *four hours every day*. Only three vessels can discharge at the same time, the jetty only allowing this number to lay alongside. The vessel is moored here with one bower in the stream, the stream anchor on the off side quarter, and two on shore warps; hauling off every day, after discharge about ten yards, and hauling in on the morning to within three or four feet of the wharf.

No customhouse officer remains on board the vessel, neither are any places on board sealed up. A strict watch is, however, kept from several guard vessels and boats, which latter are constantly rowing about. The shore is also well watched; and the master must be particularly careful, as the fines imposed for contravention of the custom laws are enforced, and the property confiscated. While the vessel has inward cargo on board, and until she is discharged and cleared, no person, not belonging to the vessel, can come on board without a written order from the customhouse. Neither can any trifling article be removed from the vessel, even for repairs, without a permit. A permit is also required for everything taken on board. I knew a chart to be seized, which a master was carrying openly on board his vessel, after having purchased it on shore.

It generally occupies from fourteen to twenty-one days to discharge a vessel of about 300 tons, after she is at the wharf, and when the cargo consists of bales and cases of manufactured goods. I have never, in any part of the world, seen a worse regulated customhouse than that at Rio Janeiro; every possible obstruction is put in the way of the vessel's discharge, and every possible inconvenience must be submitted to by the shipmaster. He himself should carefully superintend the discharge, and the mate should be most particular in his account, comparing every day, when the discharge is finished, with the landing officer's account. Bales and cases are often said to be missing, although landed. When in the stores, even the merchant often cannot find his goods for months, and in some instances never succeeds in meeting with them. Peculation and robbery are openly carried on by men in the customhouse department. I brought forward evidence to prove that two bales were broken open, and part of the contents abstracted, by the marker of the goods himself, on the wharf; yet the party continued in his employment, his superiors evidently being cognizant of the robbery, and participators, no doubt, in the proceeds.

Vessels calling for refreshments only, and not discharging cargo, are allowed to enter the harbour without paying port charges; and, from the extent of the market, and the facility of filling water from tank boats, I consider Rio Janeiro decidedly preferable to any port on the coast.\*

\* *Nautical Magazine*, 1842, pp. 803—806.



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